Challenge

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from the editor

a personal note

■ THE COLLAPSE of the Paris summit talks is still too recent for an objective evaluation of what it will mean for the future of East-West relations and world peace. The danger is that in our concern with immediate, short-run problems we ignore perhaps more important, long-run problems.

In the light of recent events, last month's student riots in South Korea and Turkey may seem inconsequential. But the recent waves of student unrest–the open defiance of established authority, the insistence on being heard–should provide the policy makers with much to think about.

Students have rioted before, particularly radical ones of both the Left and Right. However, the recent disturbances are unique in that they were inspired by very specific grievances, and neither Left nor Right, East nor West, can find comfort in them.

Students are young and energetic. They tend to be idealistic, and their heads are full of ideas and plans about the future. They have learned to be articulate. History has shown time and again that students do reflect the temper of the times, albeit more vociferously than other segments of society.

It will be interesting to see whether Khrushchev makes any mention of the wrath that swept Rhee from office and threatens to do the same to Menderes. The Soviet press has thus far made only restrained comments about the events in Korea and Turkey.

Can it be that the student uprisings in those nations have given Khrushchev something to think about–but not talk about? It is inconceivable that a man of his perspicacity has not thought about this before.

The dilemma of the West is just as deep-rooted. South Korea and Turkey are, after all, supposed to be the bastions of democracy in Asia and the Middle East. Their governments stood, and still stand, with us against communism. Apparently, being against communism is not enough. Our student-allies want progressive government as well, and government that observes the laws and practices of democracy.

Unfortunately, the West cannot be deliriously happy about these developments; for the road between an intense desire for progress and democracy, and the fulfillment of such desires has many pitfalls. How rapidly can economic progress be pushed without looking like communism? Is there such a thing as democracy by fiat–without anarchy?

Thus the problem of student riots comes down to the need for more constructive thought on the part of more mature minds. The West needs a recipe that combines stability, democracy and economic progress, each ingredient in just the right amount to make the dish palatable to aspiring peoples everywhere–and digestible at home.

As for Khrushchev, the recipe he needs is even more complicated. He must show progress, much more than ever before. And he cannot stop letting out the leash. No one has as yet come up with an answer to this difficult problem.–H.B.

letters TO THE EDITOR

Challenge invites your comments. Address letters to CHALLENGE, *475 Fifth Avenue, New York 17, N. Y.*

Math problem

• Prof. Courant [*Challenge Interview*, April, 1960] does well to point out the deficiencies in modern mathematics instruction. Many of today's high school math instructors were not trained as teachers of that subject at all. They majored in education or received training in some subject quite remote from math. For some reason many school boards seem to think that anyone trained in chemistry, for example, ought to be able to teach algebra. A few consecutive years of bad instruction, and even the gifted student is apt to be a bit confused. By the time he gets to college, his interest in math may have lagged so that he never enrolls in the course given by that inspiring instructor (if, indeed, his college is fortunate enough to have one).

R. W. TASKER

Baltimore, Md.

New frontiers

• Congratulations for the excellent article on Nigeria [April, 1960]. The world is increasingly interested in what is going on in Africa and what may develop there in the future. Africans have come to realize that work and fair wages can put them in a position to acquire many things they know to be desirable. Their leaders will make mistakes, of course, but they will be under pressure to make corrections. It is reassuring to read of the progress that is being made in Nigeria at a time when other news from the African continent is so discouraging. As your *Permanent Frontier* series seems to be drawing to a close, perhaps you could start a series on the frontiers in Africa and other areas.

T. A. HOWARD

Boston, Mass.

Unique

• CHALLENGE fills a unique place in periodicals–a magazine uncluttered with advertisements (and subtly inserted "articles" thrown in to serve as selling gimmicks in connection with them). Your magazine is filled with pertinent facts presented in straightforward style by writers who know what they're talking about.

M. D. ALMOND

Tyler, Tex.

Consumer's choice

• Robert Lekachman ["The Cult of Novelty," April, 1960] draws attention to the utter waste of planned obsolescence. This is not an excep-

tionally new idea, and the automobile industry itself seems to have learned a lesson from the "tailfin recession." Most people want new things, or things that will make their lives easier or more enjoyable. Excesses will probably be eliminated in the long run because demand will lag. As far as education goes, we are going to have to accept the fact that the vast majority of young people would rather own a car than a Ph.D. degree–and even if they preferred a degree, few of them could make the grade. We already have a surprisingly large number of college students doing work that is barely high school level. If we want people to choose education rather than consumer durable goods, we are probably going to have to impose that choice–and somehow prepare them to benefit from it. Since this solution is neither likely nor desirable, we will all continue to exercise our own judgment and preferences regarding what we do with our time, money and resources.

F. L. GRANGER

Burbank, Calif.

• To demonstrate how we benefit from improved technology and a high standard of living, Robert Lekachman states that "74 per cent of the population owns at least one automobile. . ." Even though these figures are from a most dependable source–the latest Economic Report of the President–I don't believe that it is correct to say that 74 per cent *own* cars. Finance companies and banks seem to own most of the new cars these days. So while manufacturers are busy planning for obsolescence, the consumer is just as busy using up resources that are not really his. The blame cannot fall only on manufacturers and their advertising agents.

D. B. OSGOOD

Racine, Wis.

Communications

• "The Economics of Information" [April, 1960] suggests several promising trends in consumer preference in communications. The "magazine concept" in rotating TV commercials would be a pleasant change for viewers who are beginning to be able to tell the time of day by the commercial on the screen. However, all this depends on the local station's ability to control its program output and its good judgment in doing so. This solution has its drawbacks, for local stations would be tempted to increase their revenues by showing additional commercials. Examples of this are frequent on local radio programs where announcers, newscasters and disc jockies weave references to the sponsors' products into as many situations as possible.

ROBERT S. HAMILTON

Walnut Creek, Calif.

Autocrat

• I see that the *Autocrat of the Breakfast Table* has come to life in "The Commissar and the Editor" [April, 1960], but he has been brought up to date by allusion to present-day apprehension of what cholesterol might do. The point is well taken about the whisper in the ear of petty officials given by a spiteful enemy or neighbor. But just how often this sort of thing takes place was not mentioned. Except for footnotes referring to court cases the article was long on feelings and short on facts.

JOSEPH RYAN

Topeka, Kans.

Challenge Notes

Services at a profit; the changing composition of U.S. imports; what we don't know about advertising; postgraduate breathing

■ ONE OF the most important issues facing the American people during the coming election has so far been studiously ignored by both political parties and by all the Presidential aspirants. Are we satisfied with the *kind* of prosperity we are enjoying? Have we been neglecting basic services such as health and education in favor of overpriced consumer durable goods which we don't really need? If so, can we remedy these deficiencies only by increasing government appropriations and enlarging government functions?

In a private enterprise economy, government expenditures are justified only if they provide a badly needed service which the private sector either cannot or will not supply at a profit. All other functions –such as our $6-billion farm price-support program–are economically (though not necessarily socially) wasteful.

There can be little doubt that we are suffering from serious deficiencies in certain key service areas. According to the generally accepted minimum standards set by the Hill-Burton Act of 1946, we need more than half a million new hospital beds. There is a serious shortage of doctors in many rural communities. Schools are overcrowded and teachers are underpaid. With an increasing proportion of the population concentrated among school-age children and disease-prone older folk, these shortages will probably get worse before they get better.

The real issue is: Must we rely on government to close the gap? In many cases, the answer is probably yes. But old-fashioned liberals do a great disservice to their cause by assuming that the choice is exclusively between no service or government service. If this were indeed the exclusive choice, the "march into socialism" would become more than a politician's bogey.

With more and more of the labor force and capital resources freed from the production of commodities

as a result of automation, the resources are there. What is needed is imaginative management.

As Charles H. Percy, president of Bell & Howell Co., recently told his business colleagues: "If we cannot anticipate legitimate needs and provide for them privately, we have no right to raise anguished cries of 'welfare state' when the government steps in."

Changing import picture

In spite of recent improvements in the U.S. balance of payments position, there can be little doubt that import competition will get even more fierce in the years to come. A look at the changing composition of imports shows why.

In 1946, 64.5 per cent of American imports consisted of food and raw materials; today these items account for only 45 per cent of our imports. But while imports of food and raw materials have declined in importance, manufactured imports have increased in importance. In 1946 finished manufactured imports were the smallest component in total U.S. imports; today they are the biggest component. Clearly, most of the expansion in imports since the end of World War II has occurred where it really hurts: in the manufacturing sector.

This trend can be expected to continue. Whether it will hurt economic expansion depends on (1) our ability to expand exports and (2) our ability to resist foreign competition at home in capital-intensive industries. What is worrying is that it is precisely in these areas that foreign competition has made the most serious inroads. It is not Japanese textiles but German machine tools that should be causing concern.

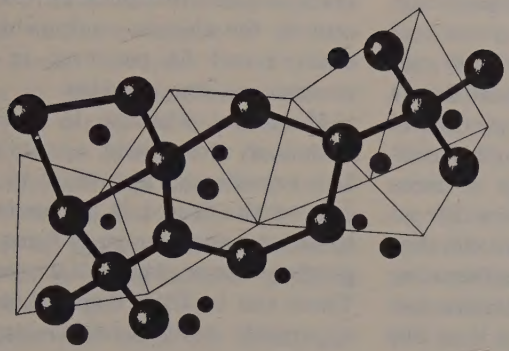
Results of advertising

Just how important is advertising in the U.S. economy? Total advertising expenditures have zoomed from $2.9 billion in 1945 to $11.1 billion last year. This is more than one-third of what business spent for new plant and equipment in 1959.

The trouble with these expenditures is that no one knows precisely how productive they are. Why is advertising so important in an industry like tobacco where there is little price competition? Has advertising helped lower prices by expanding sales? We don't know—and we should.

A breath-taking development

The New School for Social Research in New York offers a course on "Breathing: a Source of Energy." Classes are for "beginning and advanced students." Having been at it for longer than we can remember, we could probably regard ourselves as advanced breathers. None of that elementary inhaling and exhaling for us.—M.K.



DOES BIG RESEARCH GET BIG RESULTS?

by D. Hamberg

■ OF ALL THE FIELDS of knowledge open to study and exploration, none is more exciting, and certainly more vital, than the study of invention. Who invents, why, how, when? These are all questions that stir the imagination and curiosity. For, our way of life, our standards of living, our culture, are inseparably bound together with what Lewis Mumford once called "the techniques of civilization."

Yet, notwithstanding its importance, invention is one of the least understood aspects of civilization and of economic growth. But this ignorance has not prevented us from forming some hard and fast ideas about the origins of inventions. Most of us, "expert" and otherwise, believe that the giant corporations are now the mothers of inventions. Only these great firms, it is commonly held, possess the resources needed to finance the skilled teams of scientists and engineers, working in splendidly equipped laboratories, who are today the providers of new production techniques and new products. Those who may be concerned about the monopoly powers of giant corporations are assured that this is a small price to pay for their contributions to technology, and the consequent improvements in our living standards and national power.

There is undeniably a strong basis in fact for the belief that many large firms have become research-conscious and have invested heavily in large and well-equipped laboratories, staffed by expert scientists and technologists. But does large size in and of itself guarantee that a corporation will be interested in research? The informa-

tion that we possess on this question is mixed, to say the least. Aggregate industry data on research and development show that such activity tends to be conducted on a much larger scale in large than in small firms. Manufacturing companies employing 5,000 or more persons account for some 70 per cent of the research and development carried on in manufacturing industry. In contrast, manufacturing firms employing less than 500 people account for only 10 per cent of R and D in this sector of our economy.

Important qualifications

However, before the reader jumps to hasty conclusions from these figures, we must list a number of important qualifications:

•The figures refer to *performance,* not to *amounts* or *sources* of research financing. Their usefulness as a measure of corporate interest in research is considerably clouded by the fact that in 1959, for example, well over half of research and development performed in the private sector of the economy was actually financed by the federal government, mostly for defense purposes.

This explains why more than half of industrial research is performed in the aircraft and guided missiles, electronics and electric equipment industries. The federal government finances 85 per cent of corporation expenditures in the aircraft and missiles industry; 61 per cent in the electric equipment industry; and 54 per cent in the communications industry.

Moreover, whether by design, chance or, most likely, administrative expediency, less than 10 per cent of the R and D contracts let by federal agencies go to firms employing fewer than 500 people. There can be little doubt that the apparently heavy concentration of research and development activity in large firms has been given a considerable boost both by the magnitude of federal research and development spending and by the tendency of federal contracting officers to favor large corporations.

•The data show that a very large number of small and medium-size firms are engaged in research and development on some scale: 85 per cent of the companies conducting R and D employed fewer than 500 people. While it is true that small firms are less likely to finance R and D, the evidence indicates that when they do they tend to spend as large, and often larger, a proportion of their sales revenues as the bigger firms.

•The data also show that for any size group of firms, there is very great variation in R and D expenditures from industry to industry. The bulk of *unsubsidized* research is concentrated in three or four industries. Small and large

firms in most industries conduct very little R and D; they concentrate on the processes of production itself. Moreover, those industries in which the average size of firms is larger do not necessarily spend more on R and D than those in which average firm size is smaller. Even in the same industries, firms of approximately the same size differ widely in their spending on R and D.

Moreover, there are many important industries dominated by very large firms where interest in research has traditionally been small. The steel industry is a notable case in point. Virtually all important recent advances in the methods of producing primary steel have come either from outside the industry or from small firms within the industry. Continuous hot-strip rolling and the oxygen converter were developed by small firms; continuous casting and the planetary mill were created by independent inventors; the same was largely true of the evolution of processes for using taconite ores (low grade ores constituting an almost unlimited supply of iron).

Other industries

But there is no need to dwell on the steel industry. It has been said of the cigarette industry, one of our biggest and most concentrated industries, that its firms are almost totally innocent of any serious interest in research. In the equally concentrated auto industry, most of the recent engineering improvements have not come from the large firms–in spite of large sums apparently devoted to R and D. Many, like the new suspension systems, were pioneered by small European concerns. Others, like automatic transmissions and power steering, were largely the results of the work of independent inventors.

Again, during the years when the aluminum industry was a virtual monopoly of Alcoa, two of the three most important advances in production methods originated outside the industry. In the basic metal industries generally, where firms tend to be quite large, relatively little is spent on research. The same is true of the food products and agricultural machinery industries, both dominated by large firms. And so on through such similar industries as linoleum, plumbing equipment, meat products, etc.

These and other instances that can be cited where large firms have by no means been in the vanguard of developing technology are proof enough that large size and large profits do not guarantee large-scale spending on research and development and exceptional progressiveness. The fact that manufacturing industries where very large firms predominate have displayed no greater increases in productivity

than other manufacturing industries is additional testimony to this fact. So is the tendency of large companies to get into new fields by absorbing smaller ones that have already made substantial progress and possess the men with the know-how. General Electric got into the electric range and electric clock fields in this way, as did General Foods in moving into the frozen food market, and General Motors in becoming the chief producer of diesel-electric locomotives, to name but a few examples.

Recent investigations have brought a number of writers to the conclusion that existing, large firms often cannot be counted on to produce radically new innovations. A recent study of new firms established in New England after World War II reveals that a large percentage were set up specifically to innovate a new product invented by one of the owners. Frequently, the inventor felt constrained to leave his previous job because he could not interest his superiors in his invention.

Intense interest

Certainly, there are industries where the typical firm is large and interest and spending on research intense. The aircraft and electrical equipment industries are examples, but these have been the recipients of heavy government financing. The chemicals and petroleum industries are perhaps the major examples of large-scale unsubsidized research activity carried on by large firms.

Allied to the widespread belief that the giant corporation has become the cradle of invention is the popular view that the independent inventor is now a relic of economic history. How accurate is this view? While evidence on this question is difficult to obtain, what we have points to the continued, if diminished, importance of the independent inventor.

A recent study of 61 important inventions made since 1900 discloses that 33 were the products of independent inventors, unaffiliated with any industrial research laboratory. Among these 33 were such diverse inventions as air conditioning, automatic transmissions, bakelite (the first commercial plastic), power steering, catalytic cracking of petroleum, the cotton picker, cellophane, the gyrocompass, the helicopter, the jet engine, quick freezing, insulin and the continuous casting of steel. Six others, including DDT, terylene (a synthetic fiber now marketed commercially as Dacron), cellophane tape and shell molding, were the products of research conducted in the laboratories of small to medium-size firms. Only 11 of this group of 61 important inventions could be traced unqualifiedly to the laboratories of giant corporations; these included Freon refrigerants, Ny-

lon and the fabulous transistor.

Another study based on a sample drawn from United States patent data indicates that, from their backgrounds and types of employment, 40 to 60 per cent of the patentees could probably be said to have worked outside any industrial research laboratory. The raw patent statistics themselves reveal that, at a minimum, 40 to 50 per cent of the patented inventions are the work of independent inventors. Finally, the preliminary results of a study being conducted by the present writer of 45 important inventions made between 1946 and 1955 seem to show, if anything, an even larger proportion of important inventions originating outside the research laboratories of the corporate goliaths.

Economic graveyard

This evidence cannot be considered conclusive, but it is all we have on the subject. Those who would consign the independent inventor and small and medium-size firm to the economic graveyard have so far failed to provide us with more than hearsay and vague impressions.

When is large size likely to be advantageous for R and D? The persistence of unsubsidized research in certain industries, like the petroleum refining and chemical industries, both marked by very large firms, suggests that in some cases there may indeed be a close connection between expenditures on research and size of firm. This connection seems to lie in fields of research or invention where the path to success rests on a protracted and expensive series of experiments and tests. The element of chance assumes a large role as the researchers play a hunch that on the basis of known properties of certain elements or compounds (or soil and bacteria cultures), other compounds or molds (as in the case of antibiotics) with desirable properties can be found. A knowledge of science may be helpful in narrowing the range of experiments that must be performed in such cases, but perhaps only from 100,000 to 10,000 experiments. A number of important recent discoveries have been made in this "chance" manner, including tetraethyl lead, Duco lacquers, penicillin and streptomycin, among others.

The advantages of the large corporation in this type of research are not hard to discern. When inventions or discoveries involve innumerable observations from a long series of experiments, teams of research workers, with ample and sometimes elaborate research facilities at their disposal, may provide the fastest and most efficient way of achieving results. Here, then, the financial resources of the big firm may be required to provide

both the facilities and the research teams. Moreover, where the element of chance is great, the large firm is in a better financial position to absorb the costs of many failures involved before success is achieved.

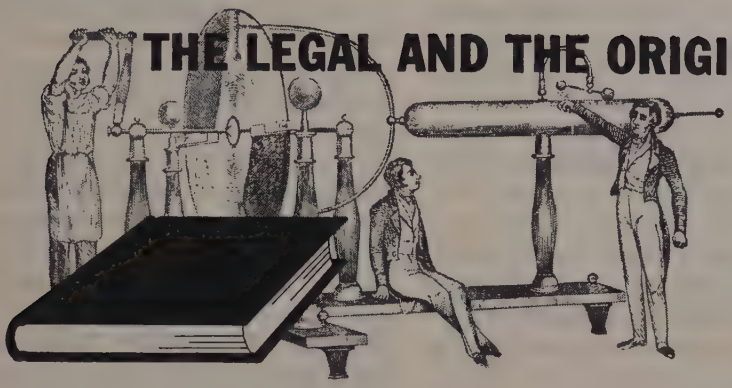
But while an ample supply of funds helps, it does not necessarily guarantee results. In fact, concentration of research attack in one large firm may actually hinder achievement. In the face of the tremendous uncertainty that surrounds most major inventive activity, it is usually important that as many avenues as possible be explored and that the individual researcher be given as free a hand as possible. High-level programming and direction should be limited to statements of objectives; the choice of pathways and techniques for achieving the objectives should be left to the research personnel, and substantial competition and even duplication in research efforts should be encouraged and fostered!

However, such an approach typically runs counter to management ideas about efficient organization. Although there are some important exceptions, the control of most industrial laboratories tends to be rather centralized. Duplicative efforts often seem economically wasteful, especially to those controlling the purse strings. Modern notions about efficiency of business administration, buttressed by growing reliance upon cost-accounting as a way of minimizing costs, are too deeply imbedded in the minds of most managements to permit the loose type of organization required for original and important invention.

The foregoing discussion raises serious doubts concerning the great industrial laboratories as the sole repositories of invention. It should also prompt us to guard against easy assumptions that large teams of scientists and technicians working under close administrative guidance, with their tasks and goals carefully pre-assigned, are indeed the best approach to invention. It certainly remains to be demonstrated that there is a definite correlation between size of research organization and quality as well as quantity of inventive achievement.

On the contrary, it is disquieting to hear of the number of research administrators who remark on the amount of trivial research that goes on in the great laboratories and the heavy spending on marginal improvements designed to maintain patent controls. And students of invention have often commented on the number of truly important inventions that have been the work of individuals unassociated with an industry and thereby able to approach its problems with a completely fresh and detached approach. ■

THE LEGAL AND THE ORIGINAL



by Joel B. Dirlam

■ WHAT ROLE do patents play in technological innovation? At first glance, it might appear that there must be a direct connection between the patent system and the improved technology which has contributed so heavily to modern economic growth. After all, the purpose of the patent system, as stated in the Constitution, is to promote the progress of science and useful arts. And the patent law, in its latest 1952 revision, has not altered the standards for patenting inventions. An inventor is entitled to a patent only if his invention is useful, represents an advance over the prior art and would not be a development obvious to someone familiar with the prior art.

The usual justification for the patent system is that it provides incentive for an inventor to hazard the time and money required for turning an idea into a new machine or process. Abraham Lincoln reportedly said that the patent system adds the "fuel of self-interest to the fire of genius."

Many individual and corporate inventors have echoed this thought. Major Armstrong, the inventor of FM (frequency modulation), pointed out that the rewards from one successful invention finance the individual inventor in developing a second. The large drug manufacturers have contended before the Kefauver Committee that the comfortable profits they obtain from selling their patented remedies provide a continuous source of funds for still more patentable antibiotics, in a kind of endless chain of research, invention, patent, reinvested profit and research.

Others have argued that the patent system stimulates technological improvement by encouraging reactions against the monopolies it sets up. They say that competitors threatened with a loss of business are stimulated to invent around a patent by discovering other and presumably superior ways of doing the same thing. In any event, the immediate connection between the patent and the invention is generally thought to be simple and obvious.

Nevertheless, serious questions have been raised about whether the patent system is directly responsible for technological change and, hence, economic growth.

For one thing, there have been revolutionary changes in the process of inventing since the institution of the patent system. Nowadays individual inventors are the rare exception, not the rule. In many large industries, inventions are produced by technicians, engineers and applied scientists who, for the most part, are hired on a salary basis. They assign their inventions to the company and make little or no profit directly from them.

Garret to laboratory

This move of the inventor from the garret to the industrial laboratory does not in itself destroy the justification for a temporary monopoly. It does mean, however, that we must appraise the impact of the patent monopoly, not in terms of the individual inventor, but rather as a device to be used or misused by his corporate employers.

In many instances, firms have taken advantage of patents to stifle, rather than encourage, technological advance. Until challenged by Ford, Selden was successful in extracting royalties from the entire motor vehicle industry on the basis of a patent on the automobile as a whole. The Motion Picture Patents Co., set up by 10 film and equipment makers, threatened to dominate the movie industry before 1920.

Where holders of patents have not succeeded in tying up an industry, they have often combined in patent pools to reduce price competition or to share the market. The Antitrust Division of the Department of Justice has been active in moving against monopolies built on patents, but it cannot be expected to police all industry, much less the terms of many thousands of patent licenses. In a few spectacular cases, of course, the Antitrust Division has been successful in getting firms such as AT&T, RCA and IBM to make thousands of patents available at nominal fees rather than on terms that would insure the perpetuation of control by the industrial giant.

Undoubtedly, many patented in-

ventions might, if generally introduced, enable the community to achieve a larger output with the same amount of resources. But the patent system itself can do nothing to assure that all inventions will be used so as to further growth. Moreover, some industries appear to make substantial progress without having to rely on patents. The rapidity of change, and the opportunity for making small changes without patent infringement, makes these industries indifferent to patents. And, in many instances, where patents are taken out, they are regarded mainly as having a nuisance value to protect the holder from infringement suits.

Grades or ranks

The reason why the role of the patent system must be limited can be found by examining the processes that give rise to patentable developments. While the patent law makes no distinction between inventions as long as they are products or processes, there are nevertheless different grades or ranks of inventions. Some, like the transistor or the first aniline dye, seem to be fundamental. They lead to long lines of offspring, also patentable, but by no means as important.

Of course, we must beware of picking out a single development as "the" invention: historians of technology have shown how difficult it is to isolate an invention–even something that seems as unique as television–from preceding developments. Part of the reason for this is that fundamental inventions are the offspring of profound advances in science which are not patentable. The law does not permit ideas, mathematical formulae or philosophies to be patented. Thus, Einstein's famous equation, $e=mc^2$, was unpatentable; nor would the idea of innoculation against disease have been patentable. Only when reduced to tangible form, in some product or process, could these theories have received patent protection.

Yet, compared with the basic advances in scientific knowledge, the specific products themselves are of slight importance. Given the developments in theoretical physics of the last 50 years, atomic power was possible. Without them, patent incentives would be useless.

If the patent system, or the opportunity to secure a temporary monopoly, were responsible for progress, it is hard to explain the failure of some industries to move forward since the patent privilege is available to all. Yet some, such as residential construction and textiles, are notoriously backward.

These differences among rates of progress, or innovation, among industries has led some economists to search for growth causes lying deeper than the patent system.

The late Prof. Joseph A. Schumpeter was confident that there was a direct correlation between monopoly power–or at least oligopoly power–and innovative progress. He would have explained the rate of advance in the electronic or drug industries by the concentration of output in the hands of a few firms.

Systematic exploration

Other economists who have attempted systematically to explore the problem are not convinced. Among these are Prof. Daniel Hamberg [*see page* 7] and the late Prof. Rupert MacLaurin of the Massachusetts Institute of Technology. They say that insulation from competition is not enough to spur inventiveness. General Electric, for instance, resting securely on its patent control of the gas-filled, incandescent electric lamp, has not provided an ideal environment for the rapid development and introduction of new light sources, even though it controls the lamp industry.

The next question to be asked, then, might be whether the industry most likely to come forth with the necessary advances is the one which, regardless of its patent record, devotes the most attention to industrial research. Unfortunately, spending on industrial research is not at all the same thing as spending on ideas that will result in increased productivity. Obviously, technological change since 1928 has by no means increased in proportion to the hundredfold increase in research expenditures since then.

Most of this increase in research expenditures is only faintly, if at all, related to increases in productivity. In fact, much industrial research may even sabotage material progress. Separating the useful research spending from the frills is far from easy. While it is likely that the 4,300 chemists employed by Du Pont in its laboratories in Wilmington, Del., will produce a stream of inventions to increase output and raise real consumption, it is not so clear that the 10,000 employees of Ford's new Research and Engineering Center will contribute a *proportionately* larger amount to real growth.

Much research and development is designed to hasten obsolescence of the stock of durable consumer goods; it is far from being a net benefit to the economy. In addition, much business research is unquestionably duplicative. The research of the pharmaceutical houses, for example, is designed to differentiate antibiotics that are similar in all but name rather than to emerge with a significant breakthrough, comparable to penicillin.

The primary obstacle in the way of assuring a greater amount of private spending on *fundamental*

research is the fact that the returns cannot be captured for profit. Nonprofit scientific inquiry of the character that gave rise to hybrid corn makes a permanent addition to intellectual capital and brings many social returns to society. But no businessman would have been interested in subsidizing Shull's experiments with inbreeding corn, even though the hybrids that eventually emerged proved to be enormously productive. In the first place, there was no indication that Shull's experiments would have practical application; second, once the process of hybridization was understood, any seed firm could produce a patentable hybrid. Third, and this limitation applies, of course, to many other technological changes, the industry experiencing the change would not necessarily enjoy high profits.

Prices and output

The increased productivity from an invention may be dissipated throughout the economy, and be reflected in lower prices and larger output. But even though the community benefits, no single industry or firm may find it worthwhile to encourage research leading to this kind of increased output.

Of course, large firms like Du Pont and AT&T finance some pure research–always along lines that may give rise to applied and patentable inventions–but the amount they are likely to spend is limited. They cannot afford to heavily subsidize activities that may benefit their rivals as much as themselves and the results of which are highly uncertain.

Small wonder that only about five per cent of industrial funds going into research and development are spent on basic research. As a matter of fact, according to an estimate by Arthur Little, Inc., about 60 per cent of fundamental physics research by industry is being conducted in the laboratories of three companies: AT&T, GE and Westinghouse.

This situation has led to the general realization that government or other nonprofit institutions must support basic research. But public support for basic research also involves policy problems. Since the federal government contracts out a huge volume of applied research, the same personnel who could do fundamental research must also work on the more immediately productive but ultimately less valuable development projects.

In the fiscal year 1960, a maximum of only $500 million was being allocated by government to basic research according to the Bureau of the Budget. In view of the extremely high social returns on expenditures for pure research, the present division of funds is highly uneconomic. In our haste to catch up with the Russians we

may find, in 10 or 15 years, that our research methods have put us even further behind.

If the number of government-sponsored applied research contracts can be cut, there may be substantial gains in efficiency in the administration of government research funds. By giving prizes for successful developments, by expanding the numbers and increasing the salaries of scientists and engineers in the government, and by increasing the direct participation of government laboratories in applied research projects, a more efficient operation of the projects could no doubt be achieved.

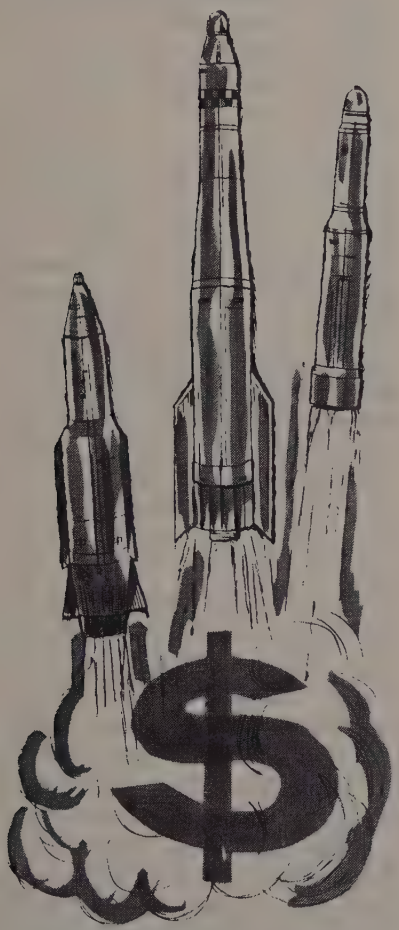
But the government's main role in the future must be in the area of basic research. And the universities should be of greater help to the government in promoting pure research. Fewer universities should shape their scientific research efforts to the applied research contracts from which they now realize close to $1 billion a year. Although these contracts are a strong temptation to university administrations pressed for funds, and to faculty members in the sciences interested in projects for graduate students, they represent a danger to future productivity gains by reducing the amount of time and talent going into basic research.

What role remains for the patent system? Controlled to prevent its misuse, the patent system can serve effectively in the limited but important area where it will assure maximum returns from patentable inventions. But it can no longer assure us of a continuous stream of fundamental innovations. That is the job of *basic* research. Only by clearly defining the fields for each activity can the proper balance be struck between *accumulation* of intellectual capital and its *application.* ■

Muscovite Market Basket

THE AVERAGE SOVIET BREADWINNER with a family of four, spends 62 per cent of the legal 46-hour workweek to pay for the basic food needs of himself and his dependents. This is an improvement over 1953, when he worked 79.5 per cent of the legal *48-hour* workweek to buy the same foods. The older worker, however, remembers with nostalgia the year 1928–the high point of consumer buying power in the Soviet Union–when limited private enterprise was permitted under the New Economic Policy of the time. Last year, the Soviet worker labored eight per cent longer than in 1928 to buy the same amount of food. During 1959 installment plans were introduced in state stores in three Ukranian cities and in Moscow. The most frequently purchased item was a radio or radio-phonograph, which accounted for one-third of all installment purchases. Also popular were woolens, watches and furs.

The economics of defense



LESS BANG FOR THE BUCK?

by Giles Mellon

■ THE LAST DECADE has witnessed a revolution in defense technology, a revolution which is reflected in the increasing emphasis on nuclear weapons and missiles in the defense budget. The U.S. has been acquiring these new and powerful weapons in ever-increasing numbers. Even so, during the last few months military and civilian leaders have increasingly protested that the heavy emphasis given to budgetary considerations in the Administration's thinking has resulted in an inadequate defense position. There are two important questions involved in this issue: (1) Can the U.S. afford higher expenditures for defense? (2) Should a greater portion of the federal budget be allocated for defense purposes?

The first question is relatively easy to answer. National security expenditures have remained at a relatively constant level of about $45 billion a year ever since 1957. At the same time, there has been a considerable growth in gross national product. For the five-year period between fiscal 1957 and fiscal 1961, it is estimated that GNP will have increased by more than 18 per cent. On the other hand, if the proposed budget for fiscal 1961 is passed, defense expenditures for this period will have risen by only about five per cent. Clearly, the economy could have stood a considerable increase in de-

fense expenditures while maintaining a healthy rate of growth in investment and consumption. In fact, by holding defense spending at 10 per cent of GNP, we could provide $50 billion for defense this year, and an additional $2 billion to $3 billion a year during the next few years, without sacrificing substantial increases in consumption and investment.

Lessening burden

The Administration, however, has chosen to hold its defense spending at about $45 billion per year. Consequently, the percentage of GNP going for defense has declined steadily in the last three years and will continue to do so in the year to come. Year by year, the real burden of defense is falling.

But before we, as taxpayers and consumers, become too elated over this defense "bargain," we must consider other aspects of the problem. First, government, like all other consumers, has had to pay increasing prices in the market for the goods and services it buys. Unfortunately, we have no index like the consumer cost of living index by which to measure this increase in defense prices. Yet, the evidence seems to show clearly that the costs of the items which make up the defense "market basket" have risen, and far more steeply than the cost of living.

There are three main categories of defense spending: (1) compensation of personnel; (2) maintenance; and (3) procurement and research. Let us look at these one by one.

During the fiscal years 1958-61 compensation of defense personnel will have risen by more than $1 billion. Yet during this period the actual number of persons in the armed forces will have declined by 300,000. During the Korean war the cost of paying 3.5 million men and women was approximately what we now pay to maintain 2.5 million. In other words, in less than 10 years the cost of paying military personnel has increased by about 33 per cent.

In the area of maintenance, the operation of fewer but more complex items of equipment has meant that, to quote from the President's January Budget Message, "increases in costs outweigh the savings resulting from declining programs, and from economy measures. . ." As an example, the President noted that the cost of each hour of flying time has risen 11 per cent in the last two years and the cost of each hour of steaming time has increased by 14 per cent.

But it is in the area of procurement that the higher price tags are really felt. Costs of procurement have risen alarmingly,

even on equipment of the same general type as that used in previous years. For example, over an eight-year period, the cost of purchasing a conventional aircraft carrier of the *Forrestal* class has risen by 50 per cent. An additional $140 million is needed for the temporarily shelved project of constructing the *Enterprise*, nuclear-powered carrier of this class. The improved model B-52 bomber costs $9 million, about one-third more than the model it will replace; Atlas-Titan missiles cost approximately $35 million *each* to put in combat position. The bill for about 40 Polaris-missile-carrying submarines will run from $6 billion to $7 billion, the missiles themselves something over $1 million apiece. Examples of this sort could be cited indefinitely.

This adds up to a considerable increase in the costs of defense maintenance and conversion to new weapons systems. For the fiscal years 1959-61, the average increase in defense costs will probably run from 15 to 20 per cent.

Obvious result

The result is obvious. If you spend the same amount of money on items which are 15 per cent higher in cost, you are going to get 15 per cent less in physical terms. Year by year, while our defense expenditures remain fairly constant, the size of our defense in terms of number of men, ships, planes and missiles is shrinking.

This does not necessarily mean that our actual defense capability is lower than it was some years ago–that our "bargain" defense is really a bad bargain. We must also take into account the increased military effectiveness of the new weapons we are buying. Though we have fewer troops, the increased firepower per man more than makes up for the decline in numbers of men in military service; in the same way the increased striking force of nuclear-warhead missiles more than outweighs a decrease in the number of manned bombers. The Administration is committed to the essentially optimistic view that the increased effectiveness of our weapons means that we can continue to increase our defense capability at constantly decreasing real costs.

There can be no doubt that budgetary considerations influence the Administration's thinking on defense. The Administration has not taken the extreme position that a balanced budget is the primary consideration or that government expenditures are limited by the level of tax receipts. Rather, it contends that the choice between a balanced budget and adequate defense is not necessary;

that we can have both, owing to the increased military effectiveness of our "new" defense.

This position is opposed by a number of persons and groups. There are those who say that we should spend what is necessary to get an adequate defense to the exclusion of other considerations. Thus, the Committee for Economic Development in its report, *The Problem of National Security,* believes that "We can afford what we have to afford." Other critics take a less extreme position; they call for increases of varying amounts in the defense budget. Thus, the Rockefeller Report calls for increases of about $3 billion a year for the next several years; top-ranking generals, the president of the Federal Reserve Bank of Boston, and other prominent men favor different degrees of increases in defense spending.

As has already been pointed out, the economy can afford considerable increases in defense spending *if* we decide they are necessary. Are they necessary? Is our present level of defense spending adequate? This question cannot be answered without realistically weighing the advantages of increased defense and the costs which it imposes on the economy. So far, there is little evidence that the problems involved in making such calculations are being seriously studied either by the Administration or by its critics.

The problems are, of course, very complex. In the first place, the "adequacy" of defense spending can only be defined relative to the military potential of the Soviet Union, and our information on this score is obviously limited. Secondly, we have no numerical way of measuring "military effectiveness." We cannot measure the "returns" from spending more money on defense projects in the same way that a business can measure the dollar receipts from introducing a new line. Thirdly, it may well be that the best possible way to advance certain defense projects is not simply to pour money into them. For example, in his recent testimony before the Congress, Dr. Wernher von Braun, the Army's chief civilian missile expert, stated that he needed qualified personnel more than he needed additional funds.

Educated guesses

Given these qualifications, certain educated guesses can still be made on the basis of readily available data. As we have previously noted, an increase of 15 per cent in costs for the fiscal years 1959-61 would mean that we must increase the over-all effectiveness of the defense effort by 15 per cent during the period in order to maintain a constant level of mili-

tary effectiveness. Moreover, as it would obviously be foolhardy to assume that the Russians have stood still during these three years, we would need an additional increase in military effectiveness to ensure that we are in the same *relative* defense position that we were at the start of the period.

This increase in effectiveness must come as a result of our expenditures on the development and acquisition of new weapons. But spending for research and procurement has been held at a constant level of about $17.5 billion for each of the three years we are considering. A large proportion is used to develop and purchase the new weapons on which the increased effectiveness of our defense establishment must rest.

This means that a 15 per cent increase in *total* defense costs must be offset by improvements in efficiency emanating from weapons purchased by a small portion of the total budget.

From this kind of thinking I would venture to make two rough judgments. The first is that there is a very good chance that our defense position in relation to that of Russia has been steadily declining.

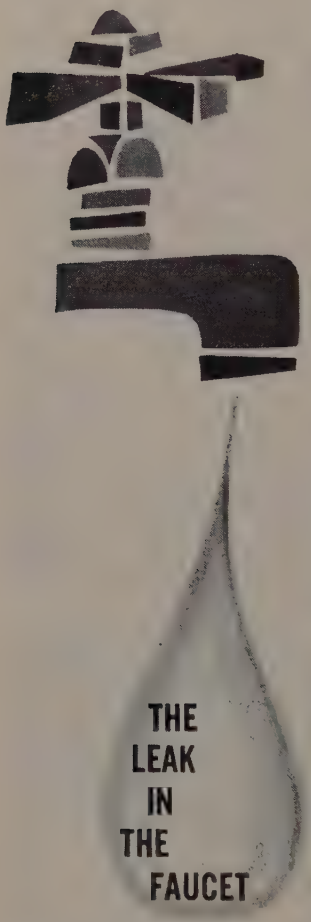
Second, we know that the Russian economy is growing at a very rapid rate. If Russia keeps a constant percentage of her GNP in military uses, and if we maintain our present policy of holding military expenditures at a more or less constant figure, then our military position, even if it is adequate at present, will deteriorate rapidly. As long as our GNP continues to grow, we can well afford to use about 10 per cent of GNP for defense purposes and still have considerable increases in consumption and investment. It seems foolhardy to take substantial risks by not doing so.

It is true that we, as taxpayers, have been getting national defense at declining real costs over the last few years, but there is every possibility that this will prove to be a very, very expensive "bargain" in the end. ■

King-Size Tax

STATE CIGARETTE TAXES are now in effect in all but four states: Hawaii, Oregon, North Carolina and Colorado. In 1959 the states received $737 million from smokers, the municipalities another $25 million, and the federal government, which imposes a tax of eight cents per pack, received $1.8 billion, bringing total cigarette tax receipts in the U.S. to $2.5 billion.

Water, politics and human nature



by Mason Gaffney

■ THE FOUNDING FATHERS, in bounding the separate states, chose to ignore watershed lines. Water returned the compliment by ignoring state lines and moving in interstate commerce. Accordingly, it was inevitable from the founding of the union that the nation's water resources should become a federal concern.

In 1824 the Supreme Court ruled that navigable waters came under federal jurisdiction. After this ruling was passed the improvement of rivers and harbors was quickly accepted as a federal function. The Army Corps of Engineers, which administers the monies for these projects, has taught generations of American statesmen the art of political logrolling. Today the functions of the Corps also include channel improvement for navigation, bank stabilization and flood control.

In the arid states federal activity in water development rests more on the Reclamation Act of 1902. This Act was foreordained when Congress admitted new states from areas without navigable waters for logrolling. The Reclamation Act redressed the interstate balance of arid and humid states by promoting irrigation as an object of national policy: irrigation was subsidized by interest-free money to be repaid according to ability. The Bureau of Reclamation administers this function. On the side it

generates power. Power pays well and yields further subsidies to support irrigation, which does not.

For all the boondoggling that has attended it, federal development of water resources has made many solid contributions to economic sense and welfare. One is full development of scarce sites and waters. The Bureau of Reclamation takes seriously its conservationist mission to economize on these valuable resources, if not on monies. So far, however, Bureau waters reach less than one in four irrigated acres in the West. Other irrigation waters come from private, cooperative and district enterprises.

"Beneficial use"

Though "full development" wants sharper definition, it certainly is easy to distinguish from the private and local practice of preclusive underdevelopment by rival empire builders. According to the Western states' appropriative doctrine of water law, perpetual enjoyment of public waters is granted free of charge to whoever first puts them to "beneficial use." State courts and administrators condone almost any gesture as compliance with this requirement, possession being nine points of the law.

Faced with equally profitable choices between full development of one site or half-hearted development of two, the private or local investor naturally prefers the latter. It serves him better to forestall competition and promote securities. He can tie up public resources, at little or no cost to himself, simply for his own possible future convenience.

The Bureau of Reclamation, on the other hand, aspires toward full use not only of damsites but of water on the land. Its standards of water economy, based on substantial research in crops and soils, are a cut above the practice on most local projects. The local appropriator's interest is to maintain a record of heavy water "use"; often he does this to the point of depressing crop yields and injuring the soil.

A second major federal contribution was to foresee and meet the growing demand for cheap power. Local units, like the Modesto and Turlock Irrigation Districts of California, were the first to cut power rates in an attempt to increase the demand. It was the federal agencies, however, who were able to achieve low unit costs from large-scale operation and area saturation.

A third federal achievement was to work out a rather reasonable division of function between government agencies as wholesalers and local units like irrigation districts and power co-ops as retailers of water and power. If the agen-

cies occasionally meddle in the retailers' affairs it is usually to preserve wide markets by ensuring that retailers pass on low rates to consumers.

Fourth, federal agencies pioneered the multipurpose concept, from small generators on the Salt River irrigation project in 1906 to the versatile titan reservoirs on the Missouri mainstem today.

Notable achievements

Fifth, federal agencies, in their role as wholesalers, have led in promoting power pools to balance irregularly fluctuating supply and demand over wide areas. Bonneville, Southeast and Southwest Power Administrations, T.V.A. and, in the Missouri Valley, the Bureau of Reclamation, have achieved notable economies.

Sixth, federal agencies have striven toward integrated design and coordinated operation of all the water facilities of a river basin, most successfully on the Tennessee. If they have not achieved comparable results elsewhere the fault is only partly theirs. For example, in the Central Valley of California, where local interests predominate, every stream has spawned rival authorities. They cooperate mostly in heckling the Bureau's efforts at de-Balkanization.

Seventh, as a water wholesaler the Bureau has contrived to retain some flexibility for adjustment of allocations to future needs. The Bureau accomplishes this by issuing contracts which run for 40 years instead of forever. The value of these contracts can only be appreciated by contrasting them with the paralytic rigidity of fixed allocations vested under state water law.

Having expressed my appreciation for federal achievements in water development, allow me now to turn coat and play the critic –not because I love Caesar less, nor Edison Electric more–but because, like other successful institutions, government agencies have freely mingled the sublime with the ridiculous.

The federal government's unique ability is in administering interstate waters. But what can it contribute in the Central Valley, which is completely within the boundaries of California? The answer is: money.

But not all or even most of California shares the treat. Those benefit most whose lands are so located as to benefit from federal works. Without the prospect of U.S. aid, landholders in these areas would often organize locally and tax themselves to improve their opportunities.

Not only does federal spending bestow unearned windfalls on a few but the prospect of it dulls the enterprise of others. It by no means

dulls their appetite for claiming water rights, for these they may hold for ransom, which U.S. spending bids up considerably. But it may suppress as much actual construction as it accomplishes.

These problems antedate the New Deal and giant government. They cut deep into our systems of land tenure, of regional representation and campaign financing, and may ultimately call for more agonizing reappraisals of the American way than most of us would care to entertain. But certainly the problems are aggravated by the growth of bureaucratic juggernauts.

These agencies, grown fat, with jobs and contracts and perquisites at stake, become too eager to perpetuate themselves. When they were small the country looked large and their poverty gave them bargaining power with local interests wanting help. Now it is "pour cement or perish," a mood not conducive to safeguarding their employers' interests.

The Bureau of Reclamation and the Army Corps of Engineers regularly lobby for projects. It is part of the service they render their clientele, and Commissioner Wilbur H. Dexheimer of the Bureau of Reclamation reaped a whirlwind when in 1954 he suggested that local interests might shoulder more of this burden. Congress relies on both of these agencies for technical advice; yet they have established unconscionable reputations for underestimating costs and overestimating benefits. And in their eagerness to woo clients they bend every effort to minimize the local contribution by allocating as many costs as possible to "nonreimbursables" like flood control and navigation.

Aggravated weakness

In their striving for future security the agencies naturally prefer starts to completions, for each start is a long-term commitment by the taxpayer for future appropriations. The agencies tend therefore to start more than they can finish–at least for a long time to come.

This agency weakness is aggravated by Congressional logrolling whereby a start in one electoral district is the price for a start in another. The combined result of these forces is to strew the rivers of America with work under construction.

If the fault of local enterprise is the half-sized project, the fault of federal enterprise is the half-finished one. While local enterprise treats scarce waters as free goods, federal enterprise treats time that way. With interest-free money, after all, time stands still. And the virtue most lacking in the agencies is a sense of urgency.

The public's capital sunk in the

early stages of incomplete projects remains sterile for years, as do the better resources whose development should have priority. Reclamation funds, instead of revolving as originally conceived, continually drain more capital from other sectors.

A study of the aggregate impact of all projects on project-reclaimed lands should frequently give pause to those planning to start questionable projects. But such studies are generally belittled until the new project has crossed its Rubicon. Thus, with each passing year the chances improve that the projects under construction will be obsolete or redundant when completed.

Pioneered techniques

Worse yet, many projects are obsolete when begun. Once upon a time, the agencies pioneered new techniques and full integration of water facilities. Today the frontier to be pioneered is the management of underground aquifers as storage reservoirs. Continuous pumping of ground water has emptied out these great natural reservoirs in many areas and presented them free to society. They offer great advantages over surface storage, and much more low-cost capacity.

The need is for grounds and facilities to recharge the aquifers, and conjunctive operation of these with surface facilities. Several local districts and municipalities are pioneering in this work.

The Bureau does supply water to some of these districts but it cannot do much more. It is bound by the federal policy of acreage limitation–that is, of limiting water deliveries to 160 acres in one ownership. To enforce this presupposes strict control of water through surface deliveries and careful segregation of federal water from the profane variety. Under this policy the agencies must largely continue in the old way, unable to practice their preachment of full integration.

Equally obsolete are the sacred cows of subsidy to irrigation, navigation and flood control. The public has become conditioned to accept these subsidies as inevitable. And the scribes and the Pharisees of water resources speak of them as cosmic verities fixed with the stars in their courses. Thus, the public's limited capital is poured into fruitless monuments to the past and the West's limited waters pre-empted from more productive new uses in industry, refining and recreation. A system of pollution control, which we need much more, starves for appropriations.

Demand for water is increasing and the problems of the arid West are moving east. Of water there is enough, and of water plans a surplus–some brilliant and some stultifying, some altruistic and some venal. Grant us the wisdom to know the difference! ■

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PUERTO RICO: UP FROM POVERTY

Developing on a shoestring

Luring capital from the mainland

Guarding against materialism

Lessons for other developing nations

Implications for U.S. foreign aid

TEODORO MOSCOSO

Director, Economic Development Administration
Commonwealth of Puerto Rico

TURN PAGE →

TEODORO MOSCOSO

Puerto Rico: up from Poverty

Q *Mr. Moscoso, it is said that Puerto Rico's "Operation Bootstrap" was the first coordinated economic development program ever initiated by a noncolonial government. Since you have been one of the guiding spirits of this operation since its beginning 20 years ago, can you tell us what you hoped to accomplish?*

A The basic idea was, of course, to alleviate misery, hunger and ignorance. It was obvious right at the beginning that even though our economy was primarily agricultural, we could not lean upon agriculture to raise our standard of living. Even 20 years ago the density of population in Puerto Rico made this absolutely impossible. So it was clear from the start that we had to industrialize.

Q *Did you have a specific program for industrialization?*

A Not really. At the beginning it was pretty much of an opportunistic type of development. We did try to improve our government procedures and we initiated civil service planning and budgeting. But it is only in the last 10 years that we have had some plan as such.

Q *What proportion of capital investment in Puerto Rico currently comes from government and what proportion is privately financed?*

A The government investment in industrial development is now approximately 10 per cent–$52 million out of a total of close to $500 million. The local private sector is represented by another 10 per cent, and the rest is private investment from the mainland.

Q *So you are dependent on the U.S. for 80 per cent of your capital.*

A Yes. But this is to be expected, since we have a very low rate of capital formation. By ourselves we could not generate sufficient savings to finance our development.

Q *To what do you attribute this huge investment from the U.S.?*

A Well, much of it, I think, can be attributed to the fact that we give tax exemptions for 10 years to any foreign business establishing operations here that would meet our requirements.

Q *Aren't you afraid that there will be a massive migration back to the States as soon as the tax exemptions run out?*

A No. I don't think so. We began studying this problem rather early in the game. Our studies, based on a comparison of the corporate tax on profits in Puerto Rico and in the States for the same type of manufacturing operations, indicate that as long as before-tax profits are higher in Puerto Rico than they are in the States, we are all right. Since our corporation income taxes are less than they are in the States–36.7 per cent versus 52 per cent–I have no doubt that most new industries will stay here. Our studies indicate that only about eight per cent of the manufacturing operations of the island today have less before-tax profit than they would have in the States.

Q *Has there been any shift in recent years in the kind of industry coming to Puerto Rico?*

A There has been a marked shift. At the beginning most of our industries were in the garment or textile category; today we have petrochemicals, oil refining, steel manufacturing and metal manufacturing of various kinds. In some industries, productivity per person is actually higher than in the U.S. In that case, of course, lower wage rates and tax exemptions become less important.

Q *You are not under a federal minimum wage law, are you?*

A We are under the Fair Labor Standards Act, but we have a special dispensation–we do not have an across-the-board minimum wage as you do in the States. Ours is applied flexibly through the device of committees composed of representatives of labor, management and the public interest. Right now, the average industrial wage in Puerto Rico is 91 cents per hour, which is close to the U.S. minimum.

Q *It has been said that one of the reasons why you have been so successful with your industrialization program is that the population surplus which usually attends a country's first stages of industrialization*

has, in your case, been absorbed by the U.S. Do you believe that the exodus of Puerto Ricans to the mainland has helped to minimize the social costs of your industrialization program?

A We do not have a migration program. We neither foster it nor discourage it. But I must admit that the migration has helped in the economic development of Puerto Rico.

Q *What do you think other underdeveloped countries can learn from Puerto Rico? To what extent, for example, is your tax-exemption program successful because of your special position vis-à-vis the U.S.?*

A It is true that our relationship to the United States has been an extraordinary advantage for us. But I do not see why any country that really wanted to attract industry could not devise a similar promotion program offering tax exemptions and other industrial incentives.

The advantage of duty-free goods

Q *But what about the fact that Puerto Rican goods can enter the mainland market duty free? Isn't that an advantage other countries do not enjoy?*

A That is an advantage for us, true. But there are other countries that have preferred positions in the U.S. market. Whether or not they utilize them fully depends pretty much on their desire for growth. Moreover, the average duty on products entering the U.S. hovers around 20 per cent, which does not seem to me to be insurmountable, particularly in the case of countries where wage rates are lower than in the U.S. and where there can be tax savings by means of tax-exemption programs. The proof that you can jump the tariff barrier is to be found in the huge market which the European countries and Japan have found in the U.S. for smaller automobiles, photographic equipment, etc.

Q *Are there any special features of your program that can be adapted to other areas?*

A While it is, of course, impossible to superimpose this program on another economy, there are certain features of it which can be adapted elsewhere. Trinidad and Jamaica, for example, have taken very sub-

stantial portions of our program and adapted them to their environments. The basic thing which, I think, other underdeveloped areas can learn from us is to marshal what resources they have and make an extraordinary effort to use them effectively. This, essentially, is what we have done.

Q *Could you elaborate on that?*

A Certainly. Let me point out that, per capita, Puerto Rico probably has fewer natural resources than any country in the world. There are many underdeveloped countries which have immeasurably more natural resources than we have but which do not have our standard of living. Secondly, I want to stress that all of the so-called advantages stemming from our relationship with the U.S. have existed in Puerto Rico since 1898. But we only began to use them in 1940. Why? I think the answer to that question can point to the solution of some of the difficulties other underdeveloped countries experience.

Q *All right, what is the answer?*

A There has to be a combination of able leadership, which we have had in the person of our Governor, Luis Munoz-Marin, and a willingness on the part of a people to change their mode of living and make certain sacrifices. The traffic jam which you see from my window did not exist in Puerto Rico 20 years ago. I think that it has been a sacrifice to accept something like this, but we have been willing to accept it because we know that it is symptomatic of progress in many other ways. Of course, a people's decision to do what is necessary to grow economically and in freedom does not come like manna from heaven. I believe that the decision is induced by inspired leadership.

Q *But can one pin it all down to just inspired leadership? Certainly, other underdeveloped countries have had able leadership.*

A I agree with you that there are many underdeveloped countries with very able leadership. There are very few, however, that have had great continuity in that leadership and I believe that this has been one of the hindering factors. In Puerto Rico there has been continuity in policy for some 20 years. Some other Latin American countries are starting to achieve that continuity of democratic government and leadership,

and you can see this reflected in their economic performance. I am thinking specifically of Mexico and Chile.

Q *You say that there has to be a desire for economic progress on the part of the population and the government. But in the highly developed economy of the United States, people are beginning to worry about the quality of the economy they have created. Is your government concerned about this problem and what is it doing about it?*

A One of the things that Gov. Munoz-Marin has taught us to ask is: Why? Why do we industrialize? What for? He has insisted that we ask this question continuously because he doesn't think we should confuse the means with the end. After all, industrialization is just a means of making people happy and making them able to enjoy life more fully.

Things of the spirit are paramount

Q *How do you get people to ask themselves that sort of question?*

A Along with Operation Bootstrap, we have instituted "Operation Serenity," which seeks to create an awareness that the things of the spirit are paramount and that industrialization is merely a means to an end. Growth for the sake of growth, without questioning why we want to grow, is absurd. By keeping in mind the spiritual factors of life, which are the important ones, I believe that we have at least attenuated some of the greater evils resulting from a too rapid rate of economic growth. For example, we have downgraded the automobile as a status symbol. Twenty years ago we had more Cadillacs per 1,000 registered cars in Puerto Rico than you did in the States. But today, owning a big shiny car is considered undue ostentation.

Q *How did you go about downgrading the automobile?*

A Partly through education and partly through very heavy taxation of the more costly models. These measures have been generally accepted, and I believe the fact that the shiny big car has lost its glamor as a status symbol in Puerto Rico is a weight lifted from our souls.

Q *You say you discourage a certain kind of consumer allocation of income because you do not believe that this contributes very much to*

happiness. Do you believe, then, that the public authority has a definite role to play in shifting spending patterns and in educating people to accept these spending patterns?

A Yes, I believe it does have a role to play, particularly in an underdeveloped country. If it is done in a democratic fashion–if it is done with the acquiescence and general acceptance of the great majority of the people–I do not believe such government action is counter to good democratic procedures. What has to be done, of course, is to make the people aware that spiritual values are more important than consumer durables. This has not been too difficult in Puerto Rico because in Latin America generally the things of the spirit take precedence. If anything, there is sometimes too much of an inclination to consider only the things of the spirit, and give no importance at all to material things.

Q *Mr. Moscoso, to return to economic considerations, to what extent do you now have a coordinated plan which tries to balance, as far as possible, your over-all economic growth and development?*

A The public sector has been pretty well planned for balanced development since 1948. Prior to that, the first few years were devoted almost exclusively to physical planning–zoning and building regulations, etc. In 1948 we started to think in terms of priorities. This meant in some cases allocating more money for industrial development than for hospital construction. The theory was very simple. A hospital will not produce an industry whereas an industry may eventually net enough profits to create the hospital. Similarly, parks and recreation had very low priorities because our original emphasis was on schools and industrial development. As time has passed we have had to change our priorities slightly every year. The change over a period of 10 years has been great.

Q *How has the scale shifted?*

A The shift has been as much as 50 to 60 per cent away from industrial development to other things needed in order to achieve balanced economic development. But this has been done so as not to disrupt the rate of economic growth. If anything, the rate of growth today is a little bit higher than it was 20 years ago. There are still some programs

whose priorities are too low, but we are working on increasing the allocations to these sectors.

Q *What proportion of the over-all investment program in Puerto Rico is managed by the government's Economic Development Administration, or* Fomento, *as you call it?*

A I would say that only about 10 per cent of our over-all investment is handled by *Fomento*. Really, it operates as a catalyst–to induce rather than to displace private investment. Some industries are in Puerto Rico today because that small, thin film of investment that we have put in has made it possible.

Q *And you think that the* Fomento *experiment is something which should be of interest to other underdeveloped countries?*

A Yes, there are many devices that could be adapted to meet the special needs of other economies. Attitudes are very important here. Believing in oneself, believing in growth and believing that you can control growth to the point where it will not destroy the values that you cherish, will allow you to do a lot of things that you didn't think possible. It is like the frog that wasn't supposed to be able to climb a tree. One day he was forced into it and from then on kept climbing trees all the time.

A showcase for economic development?

Q *Many technical, economic and social missions from Latin America and the Middle East have come to Puerto Rico to study your development program. To what extent has Puerto Rico become a showcase for economic development?*

A I believe that the value that we have as a showcase (I don't particularly like that word) is that people from underdeveloped countries can come here to see things on a scale comparable to what they will be able to accompish in their own countries. I can think of nothing more utterly frustrating to a young engineer from, let's say, Ghana, than being sent to the Columbia River in Washington and shown the Grand Coulee Dam. Unfortunately, that has been one of the approaches of U.S. technical assistance programs. Here, however, the engineer can see the

kind of construction that he will be able to accomplish at the beginning. It is only after many years that monumental things like Grand Coulee can be built.

Q *What other encouragement can you offer visitors from underdeveloped areas?*

A They will find here a people with very few resources who have been able to achieve a relatively high standard of living. Citizens in some of these countries are sitting on top of tremendous wealth which, for some reason or other, does not get tapped. And if, by coming to Puerto Rico, a window is opened in their minds indicating means of tapping those resources, I think we have accomplished something.

Q *Do you believe the U.S. can learn some lessons from Puerto Rico to apply to its own foreign aid programs?*

A This experiment can show the world that a large and powerful country can cooperate successfully with a small and underdeveloped economy. Undoubtedly, many other small and underdeveloped countries of the world would like to develop the way Puerto Rico has, but they have been fearful of imperialism. Puerto Rico, however, has not been the victim of imperialism. I think if the small countries of the world had a little more confidence in themselves as well as in larger countries such as the U.S., they would more willingly accept economic aid and technical assistance without fear of political penetration or interference with their way of life.

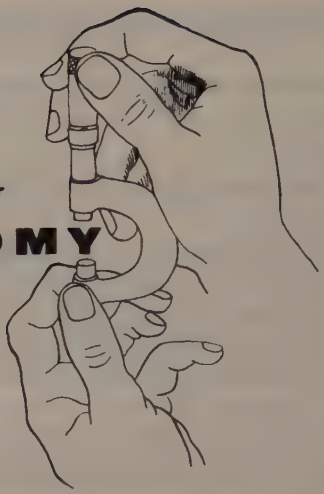
Q *But you have taken to American ways in Puerto Rico.*

A Yes, but no more than France, for instance, has taken to them. You will find that the consumption of Coca Cola and hot dogs per capita in Puerto Rico is no greater than that of France. Besides, the worst fears are of political domination rather than of cultural penetration. And I can assure you that no one feels politically dominated in Puerto Rico by the corporate enterprises that have set themselves up in the land. I think that by far the great majority of the people coming here through these enterprises have become very good citizens and have not interfered in any way or manner. It is a mutual show of confidence that has to prevail in order to accomplish the task at hand.

Q *Thank you very much, Mr. Moscoso.* ■

Economic indicators

measuring a changing ECONOMY



by Leonard Silk

■ HERACLITUS, the ancient Greek philosopher, said: "You never swim in the same river twice." And we might add, "You never analyze the same economy twice." The structure of our economy–the capacity and technology of particular industries, the quantity and quality of goods and services produced, the size and skills of the population and the work force, the factors of production, the nature of our economic institutions–all these are undergoing continuous change.

This poses a continuous problem for the economist who would like to have a consistent set of devices for measuring and forecasting economic change. If the economist were to take an extreme Heraclitan position, and assume that today's economy is truly unique, he would be debarred from depending upon the one assumption that makes it possible for him to analyze and attempt to predict change at all–the assumption that studying the past will reveal significant analytical relations that will hold up for some time to come. On the other hand, if the economist puts too much trust in the lessons of the past, he is bound to be betrayed.

Characteristically, the economist's solution is to compromise. Ordinarily he will stick with his customary analytical devices, but simply withhold full belief in what they are saying. To be too trusting of the indicators, economists like to say, is to be "mechanistic."

Periodically, however, the economist is driven to conclude that his customary indicators are getting intolerably out of whack. He then

goes to work overhauling or replacing them. With the rapid structural changes we have had in the economy since World War II, this sort of basic overhauling of our economic measures has become urgent.

The Federal Reserve Board recently put its celebrated Index of Industrial Production up on blocks for a major overhaul. The FRB index had grown somewhat insensitive to short-term changes and too sluggish in recording long-term growth. Last June, just before the steel strike, the FRB index had gone up to only 155 (1947-49=100). But broader coverage and new information boosted the index for June, 1959, to 166.

About one-third of the gain came from adding a new category–electric power and natural gas–to the index. Covering these measures of the huge use of energy in the U.S. has made the index more comparable with the industrial production indexes used in other countries.

About two-thirds of the rise came from feeding new data into the index as a whole, and from adjusting all the data to the levels shown in the comprehensive 1954 Census of Manufactures and other census surveys. This gave a truer picture of the weights to be assigned to all the products covered.

The overhaul gave greater sensitivity to the FRB index. In the recession years of 1957-58, for instance, the new index showed a decline two per cent greater than the old figures did. In all the fluctuations since the war, the new index pointed up the fact that swings in output of materials have been wider than those in finished products.

Even with these improvements, however, it has become apparent in recent years that the Index of Industrial Production has become a less reliable indicator of over-all economic activity than it used to be. This is due to the over-all shift from goods to services in the composition of total national output and employment. This shift appears to be a trend inherent in the advance of highly industrialized societies, though there is not too much consistency among economies in the pace of the trend.

George Stigler, of the University of Chicago, has sought to formulate a law that would indicate the relative shift from goods to services: "As between two countries with equal real incomes, the service industries will be larger. . .the greater the urbanization, the higher the level of education, the lower the degree of income distribution, the larger the relative numbers of children and aged in the population. . ." Stigler then adds, "And so forth."

The rise of the service industries means that the economist

must tackle the job of adding more "service" indicators to his analytical tool kit. Since services include such a hodgepodge of items–shoe cleaning, pressing, laundering, haircuts, auto repairs, car washing, amusements, medical care, private education and research, religious and welfare activities, travel –one can't be too hopeful about developing service indicators as reliable as those we have in the industrial production area.

"Leading indicators"

Strengthening our current knowledge about the service industries would improve our over-all business forecasting. It's possible, also, that a closer exploration of the service area would give us some hot new "leading indicators." For instance, a number of surveys by *Business Week* magazine have suggested, during the past couple of years, that spending on travel is extremely sensitive to shifts in consumer income–while spending on such services as water or electricity is not.

The changing structure of the economy, where it does not actually render an old indicator obsolete, may force refinements upon it. For instance, freight carloadings have been a favorite indicator for anyone wanting to know how production was going. But there was obviously a built-in secular decline in the carloading figures, as truck transport forged ahead. Nevertheless, *Business Week* still considers a couple of subgroups of carloading data as extremely useful short-term indicators of industrial change. These subgroups are "carloadings, miscellaneous and l.c.l. (less-than-carload)" and "carloadings, all other." The first category gives a good indication of the volume of shipments of manufactured goods, though it also includes some agricultural products–fruits and vegetables, meat and dairy products–plus sand, gravel and stone. The "all other" category is the raw stuff of industry: coal, coke and ore (which make up more than half of "all other" under normal conditions), grain, livestock and forest products.

Similarly, coal may be a declining industry in the aggregate, thanks to the replacement of hard coal by oil and gas in home heating. But *Business Week* likes to use data on bituminous coal as an indicator of what's happening to U.S. industry. Such data give a good indirect reflection of business activity in steel, power plants and railroads. Steel mills and electric utilities are coal's best customers, accounting for approximately 65 per cent of total consumption of bituminous coal; railroads also derive a sizable chunk of their freight revenue from hauling coal.

Electricity is becoming increasingly important as an economic in-

dicator both of the nation's long-run industrial growth and of its short-term changes. Electricity cannot be stockpiled; it is produced for immediate use in factories, offices, homes, farms–in just about every sector of our mechanized society.

Crude oil is another of the great universal products that must be regarded as indispensable for a fast look at what's happening to industry. From this raw material comes gasoline, fuel oil, kerosene, lubricants, asphalt, petrochemicals and countless other products. And the figures on crude oil come fast and reliably from the American Petroleum Institute. Speed of reporting is, of course, a key factor in what is a useful indicator.

Economic bellwethers

Some industries seem likely to maintain their status as economic bellwethers for a long time to come –simply because of their massive size and impact on the rest of the economy. Most notably, the steel and auto industries are powerful indicators of the over-all direction of the economy. Steel and autos each provide jobs for more than 750,000 of the best-paid workers in the country; and each of those great industries adds around $7 billion to total national output annually.

Yet, in a $500-billion economy, one's analysis and forecast cannot depend on just those two $7-billion giants. One must poke into the entire U.S. industrial complex, which has undergone such dramatic change since World War II. For instance, agriculture, which in 1947 provided almost 10 per cent of national income, today yields little more than four per cent of total income. And employment in agriculture, which provided more than 12 per cent of total jobs just after the war, is now down to eight per cent. Thanks to fast rises in productivity, manufacturing today employs a smaller share of the work force than it did in 1947, while holding its share of total national income. Shifts in transportation employment and income have closely paralleled those in manufacturing. Mining has lost ground in share of income and, far more sharply, in share of employment. Construction, finance, miscellaneous services and government have grown both in shares of income and employment. Wholesale and retail trade is taking a smaller slice of total income, but a bigger slice of total employment.

All these shifts are not necessarily benign–at least in the short run. For we appear to be witnessing the phenomenon of workers being forced out of high-productivity, high-wage industries into lower-productivity, lower-wage industries. This is what the Eckstein Report of the Joint Economic Com-

mittee labeled the "sponge effect." It could be one of the important factors dragging our rate of economic growth.

My own judgment, after examining evidence on the rates of change in particular industrial sectors, is that the structure of our economy has been undergoing more rapid changes in the postwar period than it did in the preceding two decades. We need more intensive study of these structural changes if we are to do a better job of analyzing and predicting business conditions.

I would conclude by urging that our government continuously update the input-output tables which trace the purchases and sales of raw material, semifinished and finished goods, and services from one industry to another. We have not had a full input-output grid of the U.S. economy since 1947, despite the enormous technological changes that have occurred since then.

We cannot be complacent about the state of our economic information–not by a long shot. The end-of-1959 forecasts appear almost universally to have overshot the actual expansion in 1960 widely. The big miss on 1960 ought to provoke economists to do some hard thinking and overhauling both of their data for analysis and of their analytical techniques. ■

United States Secret Service

THE UNITED STATES SECRET SERVICE, one of the oldest federal law-enforcement agencies, is a division of the Treasury Department. It was established July 5, 1865, to combat currency counterfeiting. Subsequently, Secret Service agents were assigned, upon request, to other departments of the government. At present, the most important job of the Secret Service is the protection of the President of the United States, his family and visitors from foreign states. This duty began in 1901 when Theodore Roosevelt became the first President to be placed under the protection of Secret Service agents, after the assassination of President McKinley.

Also under the direction of the United States Secret Service are two uniformed units: the White House Police and the Treasury Guard Force. In addition to its protective duties, the Secret Service is responsible for the suppression of counterfeiting and forgery of U.S. government checks and bonds and for investigations of violations of the Gold Reserve Act.

HOW automatic ARE THEY?

by M. O. Clement

■ ONE OF the most unexpected and welcome features of American economic life since the end of World War II has been the virtually uninterrupted prosperity. In retrospect, of course, this should not seem surprising. A number of significant changes in the U.S. economy have contributed to greater economic stability. Perhaps the most important of these has been the assumption by the federal government of a mandate, under the Employment Act of 1946, to "promote maximum employment, production and purchasing power." This mandate has been administered with great dedication.

Nevertheless, it would be premature to conclude that relatively uninterrupted prosperity will continue indefinitely. American postwar expansion has been marked by three recessions which, while brief and mild, caused considerable anxiety. Furthermore, economic forecasting, upon which the effective use of so much countercyclical policy depends, is still an underdeveloped skill. Political parties, civil servants and even economists do not agree on which of the major economic bogeys–inflation, unemployment or a slow rate of growth–is the most dangerous protagonist at any given time.

The optimists, however, pin their hopes on another major institutional change–the number of compensatory devices that have been built into the economic system and which tend to *automatically* counteract business fluctuations. There can be no doubt that these "automatic stabilizers" have contributed substantially to postwar economic stability. But the full extent of the countercyclical strength of the automatic stabilizers and the way in which they bring this strength

to bear on the level of economic activity must be properly assessed. Only then is it possible to decide intelligently what stabilization policies will best insure price stability, full employment and an acceptable rate of economic growth.

Buoy up expenditures

Theoretically, the stabilizers exert a countercyclical impact by buoying up expenditures on goods and services during economic contractions and by curbing the amount of spending during periods of expansion. This assumes that the level of spending is closely related to the level of income, the amount of liquidity in the economic system and expectations concerning the economic future. The *immediate* impact of the automatic stabilizers is upon these three economic variables and, ultimately, on the level of total spending itself.

Because of the existence of built-in stabilizers, for example, proportionately less income is taxed away during recessions, when income declines, and proportionately more income is taxed away during periods of boom, when income rises. Similarly, unemployment insurance benefits tend to sustain the level of income when unemployment cuts into disposable income. These two types of automatic compensatory action tend to shift the budget toward deficit during periods of recession and toward surplus during periods of expansion. In this way, the automatic stabilizers reinforce the impact of the government's over-all countercyclical policies.

But the above effects, it is important to note, will occur even if the government makes no conscious efforts to achieve them. For, once installed, automatic stabilizers initiate their countercyclical effects without any new policy decisions. The compensatory effects of the federal personal income tax are a good example of this. As before-tax income fluctuates during the business cycle, after-tax income fluctuates also, but not as much. This is true even though tax rates and exemption levels remain unchanged.

To be fully effective, automatic stabilizers should not unsettle the expectations of businessmen and consumers concerning the merit of their expenditures. It is possible for automatic stabilizers to have the proper effects upon *income* and *liquidity* and yet have an adverse impact upon total *spending*. This is so because in a private enterprise economy those who make economic decisions must be able to anticipate fairly simple and predictable patterns of action and reaction from the government's stabilization policies and from the economic system as a whole. In the absence of such predictability of action, consumer and business

spending decisions will become uncertain and the stability of the economy's internal response mechanism will be reduced, thereby nullifying the effects of an otherwise sound stabilization policy.

There is another extremely important consideration. To be effective and automatic, the activation and the impact of the stabilizers must be rigidly linked to variables that are sensitive to and conform with the business cycle. If the automatic stabilizers are immediately activated by critical shifts in economic activity, they will produce a desirable impact only when the business trend is *away* from equilibrium; when the cyclical movement is *toward* equilibrium, they will produce an undesirable effect. Built-in stabilizers, unless their countercyclical effects take hold only after a time lag, tend to restrain movements in economic activity throughout the business cycle's *entire* swing.

Desirable effects

Fortunately, the compensatory effects, as distinct from the activation of the automatic stabilizers, do not occur immediately. Thus, when the stabilizer is activated by economic events that conform to the business cycle, desirable effects will probably be achieved for the duration of the business cycle.

What, then, are the federal compensatory devices that qualify as automatic stabilizers? Certainly, personal and corporate income taxes and excise taxes meet the test. These give rise to a substantial flow of funds. The unemployment insurance and Old-Age and Survivors Insurance programs also qualify as built-in stabilizers, especially the former. On the other hand, the farm price-support programs, while conventionally included among automatic measures, do not qualify because they tend to reduce predictability of action.

Thus, there are only a limited number of built-in stabilizers. Just how important is their contribution to the total effectiveness of the government's countercyclical program?

To assess the role of the built-in devices, let us first examine the nonautomatic portions of the government's total stabilization effort. These are of two general types: preventive discretionary policies and remedial discretionary policies. The first of these is designed to counteract economic fluctuations by preventing expansions from turning into contractions or by reversing downswings. But the effectiveness of discretionary action depends upon demonstrably accurate forecasts. Since economic forecasting has not yet achieved this level of accuracy, the applicability of preventive discretionary action is limited.

Remedial discretionary policies,

on the other hand, do not depend on forecasting–at least not to the same degree. Action of this kind is taken only *after* there is incontestable evidence of contraction or inflation. The difficulty here is that the countercyclical effects of remedial action may be long delayed. This means that if the duration of contractions or expansions is relatively short, remedial effects may not take hold until the succeeding cumulative movement. On the other hand, if the forces making for contractions or expansions are strong, the cumulative movement may get out of hand before remedial actions can have any significant compensatory impact. Neither of these consequences is desirable.

Now, the automatic stabilizers avoid these difficulties. Since their operation does not depend upon economic forecasts, and since their mechanisms are activated by cyclical turning points, their beneficial effects will probably make themselves felt in time. Nevertheless, the built-in stabilizers cannot prevent instability. Indeed, they depend upon the continuation of instability for their favorable impact.

However, the built-in stabilizers do make a substantial contribution to dampening the business cycle's cumulative movements. During the postwar period, automatic stabilizers have limited the rise in purchasing power during expansions to about 70 per cent of its potential increase. During contractions, the stabilizers were even more powerful, holding the decline in purchasing power to about 50 per cent of its potential fall.

Level of spending

Of course, the effects of automatic stabilizers upon purchasing power do not tell us what their impact has been upon the level of spending, which is a more significant indicator of their stabilizing effects. While it is impossible to quantify the effects of the automatic devices upon total spending, we can measure their impact upon consumption expenditures. During periods of expansion, the automatic stabilizers depress consumption outlays by about one-third of what they would be in the absence of built-in devices; during periods of contraction, consumption is buoyed up by slightly more than 60 per cent. Since the change in investment expenditures is also likely to be favorably affected, the above figures represent the minimum contribution of the automatic stabilizers to the smoothing of the business cycle.

It is essential that these figures are not misinterpreted. The stabilizers cannot induce an actual increase in spending during contractions or an actual decrease during expansions. They can, however, make expansions and contractions

less severe, especially when the cycle is relatively mild and of short duration, as has been true during the postwar era. Nevertheless, our battery of built-in stabilizers does not insure a continuation of this pleasant state of affairs. If the economy were to build up forces that generate wide and protracted cyclical swings, our automatic stabilizers would be unable to restrain them.

There is another important consideration. The power of built-in stabilizers to suppress expansions has progressively diminished since the war. On the other hand, they were substantially more forceful in containing the contraction of 1953-54 than they were during the 1948-49 recession. Furthermore, the countercyclical impacts of the separate automatic devices are not reliable. Excise taxes, for example, are mildly stabilizing during upswings but not during downswings.

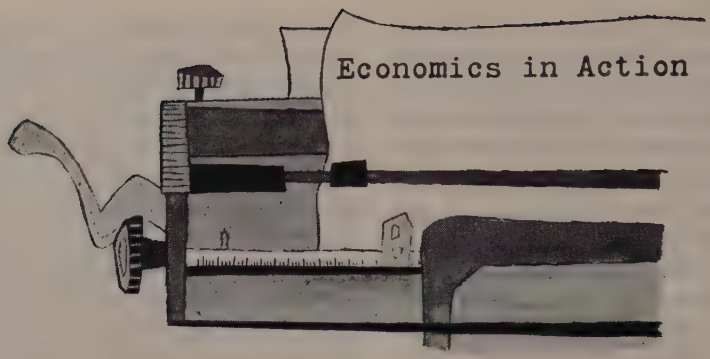
One conclusion to be drawn from this is that it is impossible to predict whether the stabilizers will be powerful enough during future recessions or inflations to prevent these swings from becoming intolerable. This means that we cannot afford to discard discretionary compensatory measures.

Another conclusion is that our built-in stabilizers seem to be more effective in supporting incomes and spending during contractions than in curbing them during expansions. In an economy where the major concern is chronic unemployment, this would, of course, be desirable. Where, however, inflation is a serious problem, automatic stabilizers may impart an inflationary bias to the economy which may be harmful.

A sober assessment of the countercyclical capabilities of the automatic stabilizers suggests that they cannot carry the burden of a successful stabilization program by themselves. They must be supplemented by constant vigilance and by a strong and vigorously applied set of discretionary measures. In addition, the composition of the stabilization arsenal should be frequently re-examined. The government's commitment to a policy of full employment, price-level stability and economic growth requires no less. ■

Yesterday's News Today

LEST TODAY'S NEWS prove too upsetting, a new periodical, *The Century Gazette*, will contain "news" 100 years old. Advertisements are accepted only from firms at least 100 years old who wish to advertise products that have been on the market for at least a century.



steel output down

The economic outlook for the rest of 1960 is one of increasing uncertainty. Steel production was running at 77.6 per cent of capacity at the end of April and was expected to decline still further. It was estimated that the average output for the second quarter would range between 70 and 75 per cent of capacity. This was in sharp contrast to the 93.1 per cent rate at the beginning of March, just before the decline began.

compact cars climb

Declining steel orders are partly the result of industry's replenishment of steel inventories which were nearly exhausted at the end of last year's 17-week strike. The waning demand for steel can also be attributed to the rising proportion of U.S. auto production going into compact cars. The compacts, which were about 31 per cent of April output, use about half a ton of steel less than standard-size cars. Many observers feel that the compacts will eventually account for about 50 per cent of U.S. auto output.

Wall Street uncertainty

Pessimism was also prevalent in Wall Street. Although selling was relatively moderate, uncertain investors were just not buying. Normally stable blue-chip stocks were particularly hard-hit, and many steel stocks were at new lows. This was especially ironical for U.S. Steel, which hit a new low despite record first-quarter earnings. The end of April saw the Dow-Jones indus-

trial average dip below 600–close to the low of earlier this year.

payments deficit eased

One bright spot in the economic picture was the first-quarter decrease in the U.S. balance of payments deficit. According to the Department of Commerce, the deficit was running at a projected annual rate of $2.5 billion in the first quarter as opposed to the 1959 deficit of $3.7 billion. This was due to the rise in U.S. exports–$1.6 billion in March–the highest level since October, 1957. This was 12 per cent higher than February and 21 per cent above March, 1959. Although government economists expect exports to hold up during the second and third quarters, the balance of payments deficit will be adversely affected by the heavy expenditures of American tourists abroad this summer. In an effort to alleviate this annual problem, Sen. Jacob Javits (R.-N.Y.) has introduced a bill to set up a U.S. office of tourism to encourage foreigners to travel in the United States.

key Congressional issues

Although Congress is bogged down in election-year politics, there are two key issues which must be faced before adjournment: foreign aid and health insurance. The President's request for $4.1 billion for the mutual security program will probably be cut by 15 to 20 per cent in the House Appropriations Committee. Most of this cut will be restored on the floor, and the final bill will not be more than $300 million or $400 million less than the President's request. Some form of health insurance for the aged will be passed. The question is whether the President will sign it. The Democratic leadership is opposed to both the Forand Bill and the Administration's plan for government-subsidized voluntary health insurance. What will finally emerge will probably be a noncompulsory program to provide hospital and nursing-home care within the social security system. It would be financed by raising the social security tax base to $6,000. ■

The goals of Latin America's common markets

DEVELOPMENT—THEN TRADE

by Robert J. Alexander

■ THE IDEA of Latin American unity is as old as independence in the area. In 1826, just after the last battle for independence was fought in South America, Simon Bolivar, the great South American liberator, called a conference of all the newly formed republics in order to explore the possibilities of establishing a sort of Latin American federation. Bolivar even talked of an association with the United States. But Bolivar was far ahead of his time. The fragmentary nature of their economies, unstable governments and complex internal problems prevented these nations from converting Bolivar's dream of Latin American unity into action.

Recently, however, there have been signs that the idea of Latin American unity is turning into something more than a patriot's dream. One of the principal results of the flowering of modern nationalism in the region since World War I has been a growing feeling of Latin American solidarity.

These new aspirations for Latin American unity have tended to find particular expression in the economic field. The Latin American countries feared that the formation of the European Common Market might have adverse effects on their own economies. The association of Common Market countries with parts of Africa would, they felt, lead Western Europe to turn to Africa for certain of the minerals and agricultural products she had previously obtained from Latin America. This would affect Latin American exports of coffee, cocoa, sugar, bananas, copper and other products.

Thus, it was evident that Latin Americans needed to have stronger

bargaining power in dealing with Western Europe. They also needed new markets among themselves in order to offset any possible loss of markets in Europe. These ends could best be accomplished if Latin American nations could achieve a certain degree of unity.

Common markets in Latin America, however, must inevitably be substantially different from similar arrangements in Europe, for *Latin American economies are not complementary.* In the past, only a very small part of the total trade of the region has occurred among the Latin American nations themselves. Though all of these nations have experienced some degree of industrialization and economic development in recent decades, each of them depends principally on the export of a narrow range of raw materials or foodstuffs for its foreign exchange. Thus, three-fourths of the value of all Chilean exports consists of copper; half of Brazil's export value is coffee; Colombia and El Salvador depend on coffee for 80 per cent of the foreign currency they earn.

It is, therefore, unlikely that the Latin American nations will be able in the near future to offset losses of European markets by exchanging their products among thmselves. However, the achievement of more complementary trade patterns among these economies is certainly a possibility. This was demonstrated during World War II when European and North American supplies were cut off from Latin America. Mexico, Brazil and Argentina temporarily supplied Latin America with textiles, pharmaceuticals and a few other products.

More important than achieving complementary trade is cooperation in economic development. With a few exceptions, Latin American countries at present have relatively small populations. This tends to limit the scope of economic development of each of them. Even those countries which have relatively large populations find that a sizable part of their citizens are "out of the market," living in such isolation or having such low incomes that they are not able to purchase any appreciable amount of goods.

The establishment of larger market areas as a base for economic development is certainly one of the basic objectives of the Latin American nations. Part of this effort must involve a workable plan of cooperation for avoiding the establishment of competitive industrialization projects. Unfortunately, the tendency among the Latin American countries thus far has been for each to try to develop the widest range of manufacturing industries, without heeding similar efforts of neighboring countries.

Latin American common markets

should make it possible to avoid such competitive and uncoordinated development efforts. For the time being at least, specific industries may be established only in those parts of a common market area which are best equipped to set them up.

The outstanding spokesman for Latin American common markets in recent years has been Raul Prebisch, the Argentine economist who has been head of the United Nation's Economic Commission for Latin America since it was established in the late 1940s. ECLA has done much of the essential preliminary research work in this field.

Little serious discussion

As yet there is little serious discussion of a single common market for all Latin America. But there are under way three attempts to establish such agreements among groups of Latin American nations, all of which give some hope for final success.

The first such attempt is in Central America. The five republics of Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica originally formed provinces of the Republic of Central America, established upon the declaration of independence from Spain more than 125 years ago. Although this republic survived less than two decades, various efforts have been made to reconstitute it ever since.

Recently, efforts for Central American unity have been concentrated in the economic sphere. In the early 1950s an organization of Central American states was established, with its secretariat in San Salvador. Under its aegis treaties were drawn up providing for the gradual establishment of a common customs front to the rest of the world, and for coordination of economic development programs. After much political bickering between the Somoza dictatorship and the other Central American countries, a trade pact providing for a joint customs union within five years was finally signed last April.

The most northerly republics–Guatemala, Honduras and El Salvador–signed a similar agreement among themselves earlier this year. In addition to establishing a customs union within five years, they agreed to set up a joint investment and technical assistance agency to plan and carry out economic development and industrialization. This agreement does not close the door to the eventual entrance of Nicaragua and Costa Rica.

The Bolivarian countries–Ecuador, Colombia and Venezuela in South America and Panama in Central America–also have a tradition of unity going back to the time of independence. During the first few years of self-government, this area was all part of the republic of Greater Colombia. In 1830, Great-

er Colombia was divided into the republics of Ecuador, Venezuela and Nueva Granada. In 1903 Nueva Granada, in turn, was separated into two parts to form Colombia and Panama.

In recent years two attempts have been made to reunite this area, at least economically. The first was in 1947 when the Charter of Quito was signed. This document set forth the intention of the four republics to eventually establish a customs union and, meanwhile, to set up several joint enterprises which would contribute to their common economic development. The most important of these was the Flota Gran Colombia, a common merchant fleet, which sought successfully to break the monopoly of a few foreign shippers on these countries' foreign commerce.

The progress of this effort was stopped by the dictatorships which ruled Venezuela after 1948 and Colombia after 1950. The Perez Jimenez regime in Venezuela preferred to pour resources into large military expenditures. The Venezuelans eventually withdrew from the Flota Gran Colombia and allowed all negotiations for a customs union to lapse.

With the re-establishment of democratic regimes in Colombia and Venezuela in 1957 and 1958, there has been renewed interest in reviving the Gran Colombia idea. Presidents Lleras Camargo of Colombia and Betancourt of Venezuela both favor the move, and preliminary negotiations for some kind of agreement are now in progress.

Free trade zone

The third attempt to establish a common market is taking place in southern South America. The issue has been very widely discussed in that area since World War II. Under the Peron regime a number of agreements were signed with Argentina's neighbors calling for a degree of economic unification. However, Peron's efforts were largely unsuccessful partly because they were too ambitious, and partly because Argentina's neighbors suspected that he had imperialistic objectives.

The overthrow of the Peron dictatorship paved the way for further efforts toward economic unification. On February 17, 1960, Argentina, Brazil, Chile, Paraguay, Peru, Uruguay and Mexico signed an agreement establishing a free trade zone among the participating nations. The agreement provides for an annual meeting of sessions of the group for the next 12 years to negotiate tariff reductions of eight per cent a year on the products of member nations of the group. It also provides for steps to eliminate other trade impediments among these seven states.

Perhaps the most surprising as-

pect of this agreement is the inclusion of Mexico in the group. Mexico is far removed geographically from the others, which form a compact group in southern South America. But Mexico no doubt fears that if she does not participate in one of the moves toward economic integration she may be isolated and "frozen out." Also, as one of the more advanced industrial nations of Latin America, Mexico undoubtedly sees this agreement as a means of increasing markets for her rapidly developing manufacturing sector.

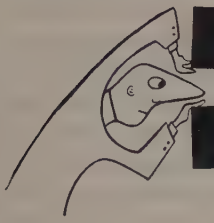
The U.S. government looks with mixed feelings on the movements toward the formation of common markets in Latin America. There can be little doubt that one of the motives behind these moves is the desire to achieve Latin American solidarity against the United States. Washington also fears that U.S. exports may be discriminated against by common market countries, preference being given to the competing products turned out by member nations.

But, in the long run, the U.S. stands to gain by these arrangements. If successful, they will help to hasten the process of industrialization and economic development in the whole of Latin America. They should help to bring "into the market" for the first time millions of people. The entry of these new consumers into the world market should have favorable effects on U.S. trade with all of Latin America.

It seems clear, then, that the United States would be best advised to accept and cooperate with the growing common market movement in Latin America. Moreover, she should reorient her whole economic policy toward Latin America in the direction of a cooperative program for economic development of the entire area. The nascent common markets might be of great use in helping to carry out such a policy. ■

Natural Sound

MUSIC-LOVING AMERICANS purchased a record $502 million worth of musical instruments during 1959—more than 12 per cent higher than in 1958. Pianos and organs were the most popular instruments. The 199,000 pianos shipped last year was the largest number since 1919; organ sales totaled 850,000. The American Music Conference counted amateur musicians in 1959 and found: 21 million pianists; 4.5 million guitarists; 3.2 million players of stringed instruments; 2.7 million woodwind players; 2.65 million brass players; and 2.3 million organists.



FORECAST FOR DECISION MAKING

by Ralph E. Burgess and Albert G. Matamoros

■ JUST WHAT does the business economist in the modern industrial corporation do? This question is widely asked by the "captive" economist's sometimes suspicious colleagues in the academic world. The same question is probably in the mind of the corporation executive who is thinking of establishing a business research department in his company.

This question has taken on increasing significance in recent years as the number of professional economists working in the business research departments of industrial concerns has multiplied. In 1955 *Fortune* magazine reported: "Twenty-five years ago there were perhaps 100 economists employed in industry; today there are approximately 1,500. Sixty-five big companies, for example, which employed a total of only 20 economists in 1930, today have 270 economists on their staffs." This trend has probably accelerated since then.

Most business research staffs are relatively small, perhaps averaging four to six professional economists.

The question as to what the economist "does" in business also assumes importance because a company's business research staff is usually placed organizationally close to the policy makers. The company economist heading a business research department invariably reports to a senior officer of the company, usually the president.

What makes the business economist so important? What does he do? Essentially the task of the business economist is to improve the quality of policy formulation as it affects both short-term operation

and long-range planning. And planning means making things happen that would not otherwise occur.

This involves, first of all, the need to determine where a company is in terms of recent sales trends, competitive position, profitability, financial position, labor relations, management development, etc. The next step is to make long-range plans which exploit the company's strengths and eliminate its weaknesses. Business research plays a key role in both of these critical stages of planning.

Uncontrollable forces

Implicit in every decision made by management is an assumption about the future. These assumptions, or forecasts, must necessarily relate to factors at work within the business such as personnel policies, products and processes. But they must also relate to external forces that are largely uncontrollable. Among these forces are general business conditions and trends, technological change, availability of resources, government policies, consumer and business attitudes, etc.

The question, then, is not, "Should a company forecast?" but, "How well will it forecast?" The business economist and his research staff gather, analyze and interpret all the data relevant to a given business situation so as to reduce to a minimum the margin of error in forecasting and, thus, in executive decision. A recent survey by the National Industrial Conference Board reveals that industrial executives who employ formal business research staffs were almost unanimous in believing that forecasting is the fundamental activity of their research staffs.

A typical corporate economist will be called upon regularly to prepare a short-term forecast of general business activity for the 12-month period ahead. Further analysis relates the general economic forecast to specific market trends which are likely to be of more immediate import to the company.

The broad purpose of short-term general economic and specific market forecasts is to provide the framework within which the sales and profits forecast will be developed. On the sales forecast rests management's planning and control of operations; the establishment of standard costs, budgets and expense control; the estimation of cash requirements; the scheduling of production and control of inventories; the planning of advertising and promotion; the formulation of sales goals, quotas and incentive programs; and the programming of labor requirements and training. The sales forecast thus assumes critical importance for the company. It is the link between the external, uncontrollable forces and the internal, control-

lable factors mentioned earlier.

Long-term forecasts of general economic, industry and market factors are another increasingly important assignment of the corporate business research staff. Such forecasts, which most frequently cover a five-year period, occasionally run 10 to 25 years. They provide the foundation for long-range planning.

The first consideration is, of course, the trend of general economic activity over the forecast period. The most common approach involves projections of population and labor force, the average workweek and productivity. As in short-term forecasts the purpose of this long-term economic and market forecast is to build the basis for a sales forecast.

Company goals

Where the sales forecast is in accord with company goals, the long-range plan is built around: (1) the amount of capital expenditures required to support the indicated future sales level; (2) long-range personnel requirements; (3) the size and *direction* of the company's research and development program; (4) future raw materials requirements; and (5) financial requirements.

This is not easy. But even more difficult problems arise when the company's goals are at variance with the forecasts. In these circumstances, the company devises a long-range plan outlining operational and policy changes that are designed to bring such goals within the realm of realization. The goal-forecast gap can be closed via the new product development route or through acquisition. Both of these approaches can be designed to achieve more intensive coverage of existing markets or diversification into new markets. The business economist can influence the ultimate decision on a choice of these methods by introducing all the relevant facts, weighing them objectively and making necessary recommendations.

Business research can and does play an integral role in new product planning. It can give direction to research and development through systematic appraisals of individual and industrial consumer needs. The business economist is also responsible for estimating the total market potential and the company's prospective share in that market, as well as for analyzing the competitive factors and distribution methods.

But these are only the first steps. These findings must then be translated in terms of the profit that any new product will bring to the company. Moreover, the financial considerations of new product development must be weighed. How much fixed capital investment will be required? What

are the inventory requirements and risks, and what are the credit and collection problems? What will be the effects on the company's overall working capital position?

After all this has been determined insofar as possible, the company's human, financial, technological and raw material resources must be examined to assure that they can carry the burden of launching a new product. Perhaps, for example, the product requires a method of distribution that is entirely foreign to the company. Or perhaps the company's financial position is so inflexible that it is unable to acquire the investment funds required to launch it. Or perhaps the company's executives are spread so thinly across the organization that the talent required to foster the growth of the new product is just not available. A balance sheet of new product requirements and company resources, drawn together by the business research staff, should reveal how the company should handle the proposed development.

Another area where the business economist can prove useful to management is when mergers and new acquisitions are being considered. His principal task here is to recommend to top management the criteria for evaluating any company being considered. After these criteria have been agreed upon, the economist's role is to apply them to proposed acquisitions. Here again, the business research staff is interested in sales trends, return on investment, management strength, financial solidity and flexibility, distribution channels, technological "know-how," plant location and efficiency, the extent of unionization, the pattern of wage and benefit agreements, and a host of other factors. Business research, by establishing and objectively applying acquisition criteria, seeks to reduce the range of executive decision and thereby to enhance the probability of success.

Evolution and acceptance

All these services–whether performed by a centralized business research department or divided among several staff groups or operating divisions–are today an important aid to management decision-making. Yet, business research, as a separate and distinct management function, is a relatively new development. The Great Depression of the early 1930s was one of the events that led to the evolution and acceptance of business research. The vast financial losses business incurred during the depression were due in part to management's lack of preparation for either the amplitude or the duration of the depression. Recognition of this unpreparedness and firm resolution to prevent, if possible, a repetition of the disastrous

experience, led a number of industrial companies to establish formal business research staffs in the 1930s.

But during World War II and the early postwar years, business was too preoccupied with defense production and, later, with huge backlogs of consumer demand. Sales volume was likely to be limited only by productive capacity. With sales forecasts dictated by what could be produced, some of the impetus that had been imparted earlier to business research was lost. However, in the closing months of 1948 the strong "sellers' market" which had prevailed in many types of goods gave way to a more competitive climate. The 1949 recession revealed that the hectic postwar period of heavy consumer buying and capital formation had come to a close. With the return of more nearly normal competitive conditions, renewed emphasis was directed by industrial firms toward planning their futures.

Today, most large, progressive industrial companies employ their own business research staffs. The National Industrial Conference Board, reporting in December, 1956, on a survey of 206 industrial executives, stated that almost 60 per cent of the executives questioned belonged to firms maintaining a business research staff or subscribing to an outside economic advisory service. Another 20 per cent of the firms looked to other outside sources for economic guidance.

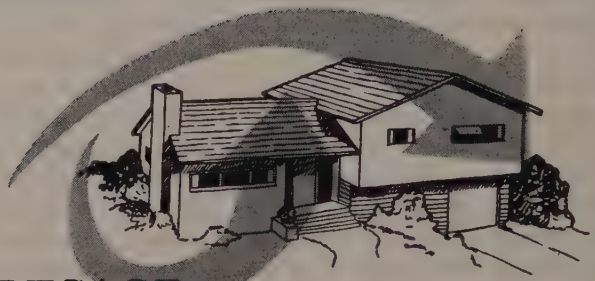
In broad terms, the business economist serves his company as a constructive–sometimes stimulating and sometimes restraining–influence. His infusion of objectivity, broad perspective and the concept of alternatives into the decision-making process, as well as his focus on longer-term trends, have helped reduce fluctuations in capital formation. This in turn has helped to maximize profits and stabilize production and employment.

As industry becomes more complex, as the general level of economic literacy rises and as the use of electronic data processing widens, it seems safe to predict that professional economists will be in increasing demand by business. ■

Answers to Challenge Quiz

(see page 79)

(1) True *(see page 19)*
(2) True *(see page 31)*
(3) False *(see page 67)*
(4) False *(see page 51)*
(5) True *(see page 9)*
(6) True *(see page 56)*
(7) False *(see page 28)*
(8) False *(see page 39)*
(9) True *(see page 15)*
(10) False *(see page 71)*



DO MORTGAGE CONTROLS HELP?

by Robinson Newcomb

■ THE UNITED STATES has tended to operate on the principle that the individual has a right to choose how he will spend his money. The idea that the government should change the rules of the market place in order to increase or reduce the choices available to purchasers at particular times is somewhat incompatible with our concept of democracy.

On the other hand, the idea that mild fluctuations in the economy are preferable to major fluctuations, and that the government should act to minimize fluctuations is also an accepted principle. These two ideas can sometimes conflict. At times it may be necessary to choose between the alternatives.

An interesting illustration of this problem is the federal government's decision to use housing controls as an instrument to blunt the boom in 1956-57 and to counter the recession of 1957-58. Did these selective governmental controls on housing by reducing the choice of housing available to customers, contribute to a better balanced national growth?

The federal government is in a particularly powerful position to exercise restraint on housing. It acts as a mortgage broker and underwriter for a large proportion of private housing starts through the Federal Housing Authority (FHA), the Veterans Administration (VA), and the Federal National Mortgage Association (FNMA, more popularly known as *Fannie May*). The government also has a hand in other mortgage

activities through its control of the Home Loan Bank System. In 1955 the FHA and VA were directly involved in about one-half of all housing started that year. There is no other segment of the private economy over which the Executive branch of the government can exert such a strong influence.

Leo Grebler of the National Bureau of Economic Research has published an excellent report on government housing controls during 1955-57, when he was at the center of the government's operation. Grebler implies that the Eisenhower Administration believed in 1955, as it does today, that "the objective of economic stability . . .may call for a restraint on federal housing credit aids at times of high employment, rapid economic growth and potential inflationary pressures."

Apparently the Administration felt in 1955 that the volume of housing had reached an unsustainable level at a time when inflationary pressures were rising throughout the economy. It attributed the high level of housing activity to the general easing of credit and the increased attractiveness of mortgages to investors. It was felt that, by making conditions less attractive, the flow of money to the mortgage market would be reduced and some of the inflationary effects of the easing of credit would be mitigated. The actions taken by the government to attain these ends can be grouped into two categories.

The first group of actions were aimed at discouraging "overbuilding" in particular communities where the local VA and FHA offices were competing with each other to see which could handle more mortgages. There was evidence that enthusiasm was overbalancing judgment in some offices, and that a crackdown was called for.

The government was, of course, well advised to take action against such practices, but there was a danger even here. Considerations of national interest can warp judgment as to what is sound and what is not sound in a particular community. Thus, general restraints can become restraints on housing, not on overbuilding in particular localities.

The actions of the Home Loan Bank Board are a good example of this. The chairman of the Federal Home Loan Bank Board told savings and loan associations to rely on local savings and to stop borrowing, except in real emergencies. This drastic move was aimed at holding housing volume down to what local savings could support, not what housing markets would absorb. Its application was particularly hard on growing communities needing out-of-town funds to finance some of their growth.

A second group of government actions sought to check home building in general by making mortgages less attractive to mortgagors and mortgagees.

Reduced flow

Among the steps taken was a reduction in maximum maturities allowed, and an increase in the minimum down payment. In addition, Fanny May reduced the prices at which it would sell mortgages. This meant that some of the funds allowed by banks and financial institutions for the purchase of mortgages went to Fanny May instead of into new private mortgages. Finally, the Federal Reserve Bank of New York issued warnings to the banks against warehousing.

There is no doubt that these and other actions reduced the flow of funds to mortgages and checked home building. The Department of Labor reported that housing starts dropped 32 per cent between April, 1955 (when action began) and March, 1957. If the government had not acted as it did, this decline would undoubtedly have been less severe and less rapid.

But, did these actions also reduce the *total* amount of savings invested, or did they mostly increase the flow of funds into other investments?

The evidence does not prove that investment was reduced, but it does show that it was diverted. The net total amount of funds placed in long-term issues was estimated at approximately $26 billion in 1955. About $12.6 billion of this was estimated to have gone into one- to four-family nonfarm home mortgages. By 1957 the total investment came to $27.6 billion of which about $8.6 billion went to one- to four-family homes.

The question then is: Did the diversion of investment benefit the housing industry, homeowners and renters? If not, did it benefit the United States more than it hurt the housing industry, homeowners and renters?

The volume of housing had been declining for several months before the government acted. Self-corrective action was already under way. The Department of Labor's seasonally adjusted housing figure reached its peak in December, 1954, and the first effective restrictive action on the part of the government was not taken until April, 1955.

Reports from the Bureau of Labor Statistics reveal further that fewer houses were started in 1955 than in 1950. Therefore, the home-building industry could hardly be blamed for any shortage of building materials in 1955 which may have put extra pressure on prices.

Prices were rising basically because other industries were using more material. For instance, private nonresidential construction

was 29 per cent higher in 1955 than in 1953. It was a combination of housing demand, growing nonresidential construction volume and growing plant and equipment volume that helped to increase costs of building materials and wages. Since the government could not cut back on nonresidential construction or on plant construction, it cut back on housing. But prices continued to rise. They might, of course, have risen more had home building not been cut back.

High overhead

There was a total drop of 36 per cent in home building between the peak period of December, 1954 and the halt of the decline. An industry fluctuating at this rate is not an efficient industry. Some surplus capacity is needed in order that more efficient companies may displace less efficient companies. But when an industry fluctuates so violently, it carries an unnecessarily high overhead. It becomes difficult for builders to buy expensive equipment or to train large staffs, since neither the equipment nor the staff can be kept steadily occupied. The action of the federal government, therefore, in pushing the volume of housing down faster and further than it would have gone in 1956 and 1957 reduced the chances for improved efficiencies and lower costs in the home-building industry. If it held down prices of materials somewhat, it was at the cost of more expensive construction and sales practices which raised prices on new houses.

Moreover, a cutback on the volume of homes built, while possibly checking the rise in construction material costs, actually may not have cut sales prices of new homes at all. The Federal Reserve Board estimates that the entire cut in mortgage funds in 1956-57 was taken by new home building. There was no decline in net new mortgage-lending on existing homes. When buyers could not buy new homes, they bought existing homes. The price of existing homes rose during these years; the price of new homes rose still more–even more than costs. Had there been an adequate supply of new homes, the demand could not have forced prices up as much as it did.

Government housing controls do not seem to have benefitted homeowners or renters or builders. The question that remains, then, is: Was the benefit from a more stable economy greater than the damage done to the home-building industry and prospective homeowners?

To the extent that the flow of savings into the mortgage market in 1955-57 was reduced by governmental action, the flow of savings to other areas, largely business investment, appears to have increased. The net volume of mortgage lending on one- to four-fam-

ily homes dropped $4 billion from 1955 to 1957. In the same period the sale of corporate bonds and stocks *rose* $4 billion. The boom in plant, equipment and inventories in 1955-57 had a more stimulating effect on business than would have been created by a steadier flow of savings into housing.

Additional upward pressure

If the volume of new home building had been greater, this would have put some additional upward pressure on some building material prices and possibly on some wages. However, as the added housing supply would have put more downward pressure on prices of new homes, home builders would have had to cut their costs or their profit margins. The price to home buyers would not have risen as much.

Actually, reported residential building costs did not rise in 1954, when residential building activity rose by more than one-third. But they did rise in 1955, when residential activity was almost constant. Changes in residential construction costs were due primarily to factors other than the change in the volume of residential activity, which was encouraged, not discouraged, by housing controls.

If cutting back on funds available for housing did not check inflation, did it help the United States as a whole in any other significant way? Did it reduce the size of the recession in 1958, for instance?

The recession of 1958 came in large part because fixed investment and inventories had gotten out of hand by the summer and fall of 1957. And the volume of private investment was supported, at least to some degree, by a diversion of funds from housing. It is quite possible that, had the government not made mortgage financing less attractive to mortgagees and mortgagors, industrial investment would still have expanded almost as much as it did. That can never be proven. But had the Administration freed FHA interest rates and left maturities and down payments alone, and had the Home Loan Bank Board not restricted borrowing by savings and loan associations, more money would have gone into mortgages and less into plant and equipment inventories.

Decline in investment

A slower rate of plant and inventory expansion might have reduced the sharp cutback in these fields in the winter of 1957-58. The decline in business investment in one quarter alone, from the fourth quarter of 1957 to the first quarter of 1958, was more than 20 per cent–the biggest drop since 1946. Fluctuation in business investment does not seem to have been reduced by government action. It may even have been aggravated.

There are four reasons why specific control over housing volume may continue to be an unsatisfactory anticyclical instrument in the future, as it was in 1955-57:

•New residential construction is very sensitive to changes in the supply of credit, and in its terms. Generally, more than 55 per cent of new home construction money comes from outside sources, largely intermediate institutions such as insurance companies. These institutions are sensitive to governmental wishes and to opportunities for the best return on their investment.

When a million-dollar bond, or the equivalent in stock, brings more than one hundred $10,000 mortgages, intermediary financial institutions are tempted to switch from mortgages to bonds or stocks. However, the extent to which government controls on credit will accelerate or slow down this switch is difficult to estimate beforehand. And an incorrect estimate may mean the controls will generate more harmful effects on the economy than beneficial ones.

Effective demand

Changes in interest rates can also have major impacts on the effective *demand* for housing. An increase in the effective interest rates of the size that occurred between 1954 and 1957 means that incomes must rise to meet FHA or VA practices. Since most families cannot readily meet substantial increases in monthly payments, housing markets are cut by increases in interest rates. Again the extent of this reaction is hard to estimate beforehand.

•It is difficult to use housing as a tool because of the time lag between decisions and results. A decision in January of a given year to cut back housing may have little of the planned effect on activity until almost the following January. It may actually increase activity for a short period, because owners and builders with commitments may feel it advisable to cash in on them quickly before it is too late. By the time the volume drops the planners may want an increase, not a decrease, in home building. But that too will take a long time to achieve.

•Governmental intervention for anticyclical reasons is harmful because it destabilizes the homebuilding industry. An industry subject to severe fluctuations cannot be an efficient industry.

•Housing controls are poor tools, finally, because they change the flow rather than the total volume of investment. As distinguished from controls over commercial banks, controls over home mortgages may not have much effect on total investent volume, and that effect may not be the effect desired. ■

THE PERMANENT FRONTIER

No. 26; postwar experience suggests that our success in resolving old problems has created new problems for future generations to solve

■ SINCE THE END of World War II, the U.S. economy has managed to solve many old problems, with new ones emerging for future generations to solve. While the nation seems closer to realizing the triple goals of maximum employment, maximum economic growth and maximum price stability, three recessions and a continuous mild inflation have indicated that a trouble-free economy is far from realized. Moreover, the *quality* of the nation's economic performance has come under intensive scrutiny and is being subjected to healthy criticism at home.

Some depression-born fears proved unfounded. During the war years, many highly respected economists, particularly Harvard University's Alvin H. Hansen, argued that the United States had become a mature or "stagnant" economy and would find it increasingly difficult to sustain a level of economic growth consistent with maximum employment. Hansen feared the consequences of a slowing rate of population increase, disappearing natural resources, the high level of corporate savings and the abundance of capital-saving inventions.

In spite of these fears, the postwar economic performance was remarkable. Measured in 1959 dollars, gross national product rose from $319.5 billion in 1946 to $479.5 billion in 1959, an increase of more than 50 per cent. Personal disposable income, again in 1959 dollars, increased from $243.3 billion in 1946 to $337.2 billion in 1959.

A number of factors help to explain these statistics:

This is the 26th article of a series in CHALLENGE which deals with the history and development of the United States economy.

• *Increasing labor productivity.* According to the 1959 report of the National Bureau of Economic Research, output per man-hour, which had risen an average of 29 per cent per decade in the pre-World War II era, rose at a rate of 35 to 40 per cent per decade following the war. Much of this increased productivity could be traced to the effects of automation, technological innovations and scientific research.

• *Expanding population.* During the 1930s, experts were predicting a population of 140 million by 1960. Actually, by mid-1950 the population had already passed the 170 million mark and was approaching 180 million at the end of 1959.

• *The phenomenal expansion of credit* facilities. Between 1946 and 1959, short- and intermediate-term consumer credit, mostly installment debt, rose from $8.4 billion to more than $50 billion. In the same years, furthermore, nonfarm mortgage debt rose from $23 billion to $131 billion. This great expansion in mortgage debt, which enabled 62 per cent of households to own their own homes by 1959, was clearly helped by relatively inexpensive government financing. Almost half of the 1959 mortgage debt was underwritten by either the Federal Housing Authority or the Veterans Administration.

• *An expanded government role.* Countercyclical fiscal and monetary policy buoyed the economy in time of crisis. This policy was supplemented by certain "automatic anti-recession stabilizers," such as unemployment compensation programs and social security, which injected income into the economy during recession periods. Disposable income, therefore, held up well in spite of production and employment cutbacks during the recessions of 1949 and 1958.

Another aspect of the expanded role of government was the sheer increase in government spending. Local, state and federal spending rose from 11 per cent of GNP in 1929 to more than 20 per cent in 1959. The most significant item in the federal government's budget consisted of defense and military expenditures. In the 12 years following the end of World War II, more than $400 billion was poured into the economy for security purposes. At the same time, upwards of $40 billion was spent on highways between 1946 and 1958 and, in the same years, total public construction came to $122 billion.

The postwar period accelerated certain long-range trends in the nation's economy. These reflected important structural changes, and adjusting to them created new problems that the affluent American society must now seek to solve.

One such trend was the growth of a new middle class. Between 1870 and 1940 the white-collar

class was the only social group to increase in proportion to the population.

Since the end of World War II, this trend has continued. For one thing, the long-term effects of technology on agriculture began to be seen again, especially after the Korean war. Farm output rose 25 per cent between 1946 and 1959, while agricultural employment dropped by 35 per cent. In these years output per man-hour on the farm almost doubled. Consequently, the problem of agricultural surpluses became acute.

Dramatic shift

Even more dramatic was the employment shift in manufacturing. Today the U.S. is the only economy in which fewer people are employed in producing goods than in distributing and servicing them. An important reason for this has been the great increase in manufacturing productivity (partly the result of automation) that has taken place since the end of World War II. Since 1947 the number of production workers in manufacturing actually declined by almost a million, while industrial production expanded by more than 50 per cent. What increase there has been in manufacturing employment has been concentrated almost exclusively among nonproduction workers–office workers, marketing specialists and the like. In fact, most of the new employment opportunities during the postwar period were to be found in the service sector of the economy.

Another long-term structural change was the growing political and economic power enjoyed by large economic groups. The growth of giant corporations was accompanied, during the postwar period, by "countervailing" concentrations of power in the huge national labor unions. Prices and wages were increasingly established in business conference rooms and around the bargaining table rather than in the market place. In the long run, of course, prices were still fairly sensitive to fluctuations in consumer demand; in the short run, however, they proved quite inflexible. On balance they were more liable to go up than down with the net result that a "creeping inflation" began to characterize the postwar economic scene.

In spite of the general prosperity and the significant redistribution of income that had occurred before 1945, poverty had not been completely eradicated. In certain depressed areas of the country–mining towns of West Virginia, some textile communities in New England, and the urban slums of New York's Harlem and Chicago's South Side–living standards were not what most Americans would wish them to be. But knowledge that these problems exist has

sparked a general effort under public and private sponsorship to remove these isolated pockets of poverty.

But as poverty was being erased from the American scene, other problems came to occupy the nation. Perhaps the most significant of these involve the process of economic growth itself. In spite of unprecedented prosperity, economists and political leaders began to debate the *quantity* and *quality* of the nation's economic progress.

A look at the U.S. growth performance over the last 40 years reveals little to be concerned about. Between 1919 and 1959 the nation's GNP grew at an *average* of 2.9 per cent annually. There is some evidence, however, that the rate of economic growth has been slowing down since the end of World War II. Between 1947 and 1958, for example, GNP grew at an average rate of only 1.5 per cent. Since the average rate of growth during nonrecession years was 3.5 per cent annually, this meant that even the mild recessions that the U.S. experienced during the postwar period could seriously slow down the pace of her economic development.

The *quality* of our national prosperity was still another subject of mounting controversy in the 1950s. Too often, critics argued, the allocation of the nation's resources was lopsided, with too much labor and capital going into the production of consumer durable goods and too little into basic services such as health, education, urban renewal, etc.

Both in the public and private sector, it seemed that basic social services were being shortchanged. Private universities were finding it increasingly difficult to make ends meet in spite of constantly increasing tuition rates. In 1948-49, the operating expenses of Yale University (one of the nation's most affluent institutions of higher learning) totaled $50 million–or just about twice the amount spent by only two large liquor firms on newspaper advertising alone.

On the other hand, those who answer such criticism are quick to point out that private universities in the U.S. are not losing students because of tuition increases. Thus the cycle of self-criticism and evaluation goes on.

Gadgets and durables

The consumer, too, has been accused of the same failings as the economy on the whole. While enjoying the highest level of service in the world, he is spending, according to some economists, too much on gadgets and consumer durables and too little on such basic services as education and health.

But it was in the public sector that critics found the greatest de-

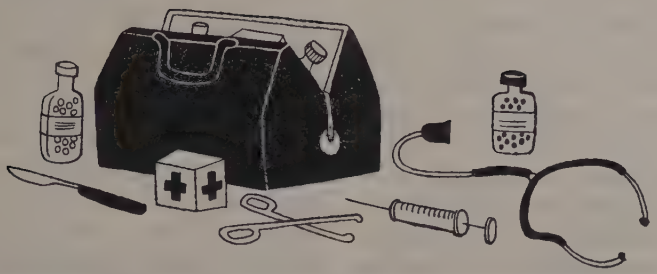
ficiency. Many schools were overcrowded; experts estimated that the nation was short 130,000 classrooms in 1959 even though 180,000 new classrooms had been built since 1945. There was a serious shortage of hospital facilities. Many urban centers became so congested that auto transportation in them became almost impossible. The situation had become so serious that Major General J. S. Bragden, a special assistant to the President for public works planning, recently reported that "in almost every field in public works–hospitals, schools, civic centers, recreation facilities–shortages are the rule, not the exception."

And yet, in spite of all these deficiencies, the United States emerged during the 1950s with a standard of living which the rest of the world (including, it seems, the Soviet Union) desired to emulate. The problems which the United States began to face during the Fifties were, after all, the problems of prosperity, or "affluence" as one perceptive critic put it. If Americans were beginning to learn that a high level of consumption and of general material well-being does not automatically increase human happiness, they were quite right to insist that the problems of affluence are easier to bear than the problems of poverty. Most of the other nations of the world seemed anxious to tackle the problems of affluence themselves.

In the United States, certainly, affluence did not lead to selfish materialism. Even while a well-known American anthropologist was condemning the modern tendency to "escape into one's own little house and one's own garden and one's own children, and the small bit of life which one can make a success in," Americans had initiated the largest and most disinterested relief program for the economic reconstruction and development of other countries the world has ever known. Individually, Americans are today probably better informed and more sensitive to national and international problems than at any previous time in their history.

During the postwar period, the economy's frontier had been the will to achieve maximum employment, price stability and growth. So much progress has been made in this direction that the new frontier of the 1960s and 1970s will undoubtedly be the adjustment of American institutions as well to the rigors of a maximum growth economy. ■

NEXT MONTH: tomorrow's frontiers for the U.S. economy



GETTING MORE FOR MORE

by Selma Mushkin

■ MEDICAL PRICE INCREASES are a symptom not of the ills but of the health and vigor of American medicine. During the past 60 years, death rates have declined and life expectancy has increased spectacularly. Between 1900 and 1917 death rates declined over one per cent per year. This rate decreased, however, during the following 20 years. The decline in the first part of the century is largely attributable to environmental public health expenditures rather than to personal health care. Through public health measures, diseases such as typhoid fever were brought under control.

In recent years mortality has declined more than twice as fast as during the 1900-17 period. This acceleration is attributable mainly to the dramatic use of new drugs in the treatment of infections.

As a result of this success in controlling infectious diseases, the challenge to modern medicine lies in the chronic heart, cancer and mental diseases. Diagnosis and therapy are more complex, require long periods of care and the use of X-ray and other expensive equipment.

Successes in medicine have also contributed to making medical care more popular. Obviously, there is more reason for buying services if they can do some good. Doctors' visits now average about five a year per person. As recently as the prosperous 1920s, doctors' visits averaged a little over two per person. Hospital admissions have also climbed. In the 1920s, one out of 17 persons in the population went to a hospital during a year; today one out of eight enters a hospital during the year.

Medical care prices have increased rapidly since World War II, rising more than 50 per cent from their 1947-49 average–a larger rise than for any other broad category of consumer expenditure. Hospital room rates rose 110 per cent and group hospitalization insurance premiums 57 per cent. Apart from these large increases, prices for medical services–physicians' and dentists' fees and charges for optometric examinations and eyeglasses–rose about the same or less than prices on all consumer *service* purchases. When hospital rates and insurance premiums are excluded from the medical care index, the rise is only slightly above the 25 per cent increase in consumer prices generally and below the 45 per cent increase in all consumer services. Physicians' fees increased 42 per cent; dentists' fees, 35 per cent; and surgical charges, 26 per cent. Prescription and drug prices combined rose 23 per cent.

Different and better

The index on which these statistics are based is so constructed as to give continuity to the "package" of goods purchased by consumers. Thus, it does not show the higher prices now paid for *different* and *better* products. When there is dramatic improvement in product and service, as there has been in medical care, the consumer price index does not tell us the whole story. In compiling the index, physicians' prescriptions are selected and priced in drug stores in major cities throughout the United States. For example, the price of penicillin is compared with that of five years ago. The newer antibiotics prescribed today, however, sell at a higher price. Today, it benefits the patient purchasing prescribed new antibiotics little to know that he could buy penicillin at a substantially lower price than he paid five years ago.

The consumer price index shows an increase in prescription prices of almost 35 per cent since 1947-49. The average price of all prescribed drugs is reported by the drug industry to have increased 90 to 96 per cent during the same period. Group hospitalization premiums have increased 57 per cent during the same period. But these statistics do not necessarily include the price changes brought about by the broadening of hospital insurance coverage.

Ancillary professions

One concomitant of medical progress is the increased need for care requiring specialization and new professional skills for diagnosis and therapy. The services of the physician are increasingly augmented by services of other health personnel. Whereas at the turn of

the century three out of five professional health workers were physicians, today physicians account for less than one out of five. Ancillary health professions are increasing in number. While improving the quality of care, they also add to its cost.

The length and cost of training of professional health manpower has risen. The usual period of training of the physician has expanded over the years. Today about 70 per cent of all medical school graduates go into a specialized field requiring three to five years of training beyond the five years required for medical school and internship. The training period of dentists has been expanded over the past two decades. More and more prospective dentists are completing their college education before admission to dental school. Many graduates enter a period of internship after receiving their degree and go on for specialty training. An increasing number of nurses also complete their college work. The optometrist now goes to school five to six years beyond high school; in 1936 he went four years beyond high school to get his degree in optometry.

Curtailed supply

The continual lengthening of periods of training tends to curtail the supply of trained health personnel and, at the same time, to raise the income requirements of those completing training.

The commodity components of medical care–drugs, surgical supplies, medical equipment, ophthalmic goods, dental supplies and apparatus–also contribute to higher costs of services. Many of these commodities are produced under patent and trade-mark protection and in fairly concentrated industries. A dozen drug firms, for example, are reported to do about two-thirds of the pharmaceutical business. Two large firms dominate the eyeglass trade. Most of the scientific apparatus, surgical instruments, medical equipment and supplies are produced by a few large firms.

Cost of labor

General economic conditions also contribute to the rise in medical care prices. The cost of food, laundry and utilities has increased for medical service practitioners as for other buyers. But the primary cost increase has been labor. About one-half million people are employed in the offices of physicians and dentists. A million and a half are employed in hospitals (on a full-time equivalent basis), excluding interns, residents and students.

Since 1948 hospitals have added one-half million people to their payrolls. They face the problem of recruiting new employees and retaining old ones in a tight labor

market. As a consequence, the workweek has been shortened, and the average pay per full-time hospital employee has increased more than 80 per cent between 1948 and 1958.

The pay of interns and residents is also bound to rise. Although nonpay or token-pay apprenticeship during periods of training has generally disappeared in our economic system, it still prevails in medicine. When this system inevitably changes, the immediate financial burden will fall on hospitals if alternative sources of funds are not found.

Payment patterns

Along with the rising cost of medical care, payment patterns are also undergoing marked changes. About 70 per cent of the population is now covered under voluntary health insurance plans. Only about 25 per cent of the more than $8 billion of operating expenses of hospitals is directly borne by the patient. The remaining 75 per cent is paid either directly out of public funds or through prepayment arrangements such as commercial insurance or Blue Cross.

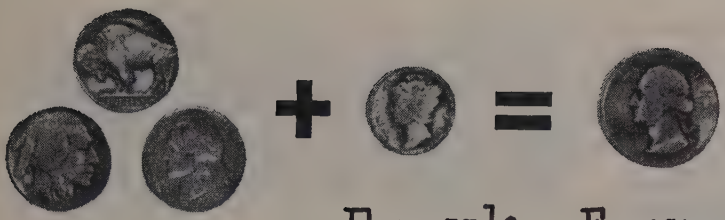
We can see, then, that neither the aging of the population nor "abuses" contribute importantly to higher prices. While the aged use hospital services much more than others in the population, the increasing numbers when averaged out over the whole population growth add less than 10 per cent to hospital use.

Some of the increased use of hospital facilities has been due to the concentration of health insurers on hospitalized illness as a more easily administered risk. Hospital use is higher for those insured against expenses of hospitalized illness only, than for persons insured in plans which provide out-of-hospital diagnostic services.

We have seen then, that the major factors in our rising medical costs are chiefly hospital charges and insurance premiums. For the most part these reflect the greater effectiveness of medical care. Few would reverse this trend; in fact, the amount of funds and resources going into medical research has been vastly enlarged. Gains from this new research may well add further momentum to the rising cost of medical care. ■

Foreign Currency Loans

SURPLUS U.S. farm commodities sold abroad are purchased in foreign currency. The federal government sets aside one-quarter of the money obtained from sales for loans to U.S. or foreign firms for business development and trade expansion overseas which will expand markets for U.S. agricultural products. At present, nearly $250 million worth of foreign currencies are available under the loan program.



Everyday Economics

■ UNDER FEDERAL LAW, a landlord is forbidden to evict a tenant who continues to pay rent unless:

The tenant is violating a substantial obligation of his tenancy; he commits a nuisance or uses the property for immoral or illegal reasons; he refuses to permit the landlord to inspect the property; the landlord is a state, county or municipality; the landlord wishes occupancy for himself or his child; the landlord wishes to alter, remodel or withdraw the property from rental; the landlord is a tax exempt organization which wishes use of the property for its staff.

Time to buy

WORLD WAR II veterans have until July 25 to file applications for Veterans Administration guaranteed home loans (Korea veterans have until February 1, 1965 to obtain GI loans). To be eligible, a World War II veteran must have had military service between September 16, 1940 and July 25, 1947, have served at least 90 days and have received an honorable discharge. The unremarried widow of a veteran may also qualify. The VA does not *lend* money to the veteran–he must make arrangements through usual lending channels. The VA guarantees the lending agency against loss on up to 60 per cent of the loan.

Additional income?

PERSONS whose federal income tax is withheld from their pay check, frequently neglect to file an estimate of additional income in excess of $100 from which taxes are not withheld. This income may come from interest, part-time work, rent (income from renting a summer cottage or city dwelling during vacations), etc. If the taxpayer's return is selected for special processing, failure to file estimates

will be brought to his attention. Estimates may be filed at any time after the usual April 15 deadline that the taxpayer finds that his excess income will exceed $100.

Business and pleasure

SUMMER tourists who plan to combine business and pleasure on a trip to Europe should inquire whether a visa is required in the countries to be visited. Although no visa is required for tourism in Western European nations, many *do* require visas for business travel. Inquiry can be made at the consulates of foreign countries, or by writing to the Bureau of Foreign Commerce, U.S. Department of Commerce or to the Foreign Commerce Department of the U.S. Chamber of Commerce.

Family saving

AMERICANS who are taking their families abroad this summer should remember that the $500 allowance on duty-free goods purchased on the trip applies to children as well as to adults. The family may pool its exemptions to reduce the duty to be paid on a foreign car or any other major purchase for "family use" (i.e., dishes, rugs, antique furniture, etc.). Children may also bring a full quota of perfume, liquor and cigarettes into the United States.

Musical saving

A RECENT ruling of the Internal Revenue Service will be a boon to music lovers who prefer recordings on magnetic tape to phonograph records. While phonograph records are subject to the 10 per cent manufacturers excise tax, magnetic tape recordings are not, because they are not played on a phonograph or radio-phonograph, as specified in the regulation.

Closed to the public

OWNERS of summer property bordering on a public beach or recreation area sometimes permit the public to use their private path to the recreation facilities. Permitting such use for an uninterrupted period of 15 years will give the public an easement entitling it to permanent use of the path. To prevent this, the landowner should block the way at least once in a 15-year period or post notices stating that use is by the owner's permission, which may be withdrawn at any time.–S. T.

Soviet Economic Warfare. Robert Loring Allen. 291 pp. Washington, D.C.: Public Affairs Press. $5.00.

•Nikita Khrushchev's statement, "We declare war on you in the peaceful field of trade," leaves no doubt about the motives behind Soviet trade and aid programs. Loring, who has studied Soviet economic warfare as Director of the Soviet Bloc Foreign Economic Relations Project at the University of Virginia, concludes that Soviet moves in this field may have reached the point of diminishing returns in at least one area–the Middle East. Soviet prestige is still high among underdeveloped nations which respect her industrial might. Many of the Soviet Union's trading partners have learned that she is not a responsible trader. Faulty equipment and a shortage of replacement parts, spoiled or poor quality foodstuffs and failure to meet delivery deadlines plague customers of the Soviet Union.

Already, some underdeveloped countries are hard-pressed to repay Soviet loans. Indeed, there is some danger that unpaid debts may provide an excuse for political or even territorial intervention at some future date. The free world cannot wait for the underdeveloped nations to become aware of the threat. We must offer even juicier trade-aid "carrots" and make it more apparent that there are no strings from which they dangle.

* * *

The United States in the World Arena. W. W. Rostow. 568 pp. New York: Harper and Bros. $8.75.

•The book's subtitle, An Essay in Recent History, is something of an understatement for a volume that is 568 pages long. Such length is discouraging to those readers who are primarily interested in Rostow's always provocative ideas. Rostow is highly critical of the Eisenhower Administration for its passivity. In the months after the Soviets launched the first sputnik, the American people were, he believes, apparently willing to make any sacrifices that might be necessary. But since the Administration told the people that there was nothing to worry about, they lapsed back into their preoccupation with tailfins.

Rostow is also deeply concerned about our neglect of the economy's public sector and points out that the proportion of gross national product devoted to this area has

been declining. The world's most affluent society can certainly give its children a decent education and support an adequate defense establishment, even if this should require some sacrifice through higher taxation.

* * *

The Constitution of Liberty. F. A. Hayek. 570 pp. Chicago: University of Chicago Press. $7.50.

•Hayek, one of the truly great economists of the 20th century, here addresses himself to the kind of problem most of his colleagues shun (at least in public print): a comprehensive statement of basic political beliefs. *The Constitution of Liberty* is no wordy propaganda tract telling its readers what they want to hear. Rather, it is a tough-minded restatement of "classical" liberalism for a world which has abandoned it in favor of planning and the welfare state. For Hayek, liberty is the source of all other moral values; without it, in fact, there can be no true moral progress. Not only ought the future always be left uncertain and subject to accidental change, but in the long run (and in spite of what the planners may do), it *is* uncertain. No man can ever tell what life can bring him; he can, of course, think he knows, but only at the cost of leading a poorer and less-interesting life.

Most readers will feel that Hayek pursues this argument to extreme lengths. It is at best questionable that the mythical "average" man's freedom has, on balance, suffered as a result of social security, unemployment compensation, etc. On the other hand, there undoubtedly is a conflict between liberty and much of the "social engineering"–not only by the state–that characterizes our era. This book points out precisely what that conflict is.

* * *

The Meaning of Modern Business. Richard Eells. 427 pp. New York: Columbia University Press. $7.50.

•This book is highly recommended for anyone interested in that most important economic institution of the "new capitalism": the large modern corporation. Eells, who heads public policy research for General Electric Co., combines a lifetime of experience in Big Business with a lifetime of study about it. The result is a remarkably perceptive "introduction to the philosophy of the large corporate enterprise," which should provide much food for thought in executive suites.

Eells ducks none of the problems. One of the biggest of these is responsibility. Precisely who is the modern corporation responsible to–customers, stockholders, employees or the general public? What yardsticks should it use in deciding among these various claimants? This kind of question did not arise 50 or even 30 years ago; our large companies had no divisions of public policy research during the 1920s.

But today companies cannot avoid asking such questions–and explaining their answers, not only to their stockholders, but also to Congressional committees, administrative agencies and an increasingly inquisitive public. More important, the new class of professional managers are themselves looking for answers. If they will read Eell's book they will find that he has made an important beginning in this direction. ■

Challenge Quiz

How well can you do with this true–false quiz? Test your ability to increase your knowledge through reading. Ten correct answers is Excellent; 9, Good; 8, Average. If you do the quiz *before* reading the articles, 6 correct answers is good. Answers on page 59.

(1) U.S. expenditures for national security have remained relatively constant since 1957.
True ☐ **False** ☐

(2) Puerto Rico, though under the Fair Labor Standards Act, does not have an across-the-board minimum wage.
True ☐ **False** ☐

(3) Since 1870, the American white-collar class has increased at a faster rate than the population as a whole.
True ☐ **False** ☐

(4) Latin American countries have agreed to establish a common market in which all will participate.
True ☐ **False** ☐

(5) In the automobile industry, most of the recent engineering improvements have come from small concerns or independent inventors.
True ☐ **False** ☐

(6) Forecasting is the fundamental activity of the business research staff of an industrial concern.
True ☐ **False** ☐

(7) The federal government is currently spending more money on water pollution control than on irrigation.
True ☐ **False** ☐

(8) The Federal Reserve Board Index of Industrial Production was recently revised to include most service industries.
True ☐ **False** ☐

(9) Under U.S. patent law, mathematical formulae may only be patented if reduced to a tangible product or process.
True ☐ **False** ☐

(10) During the first 17 years of this century, the U.S. death rate declined more than five per cent per year.
True ☐ **False** ☐

Closet Cues: Closet light that is automatically turned on when door is opened and off when it is closed, can be quickly installed with a screwdriver. Unit works on household current and has a 10-foot cord. . .Space-saving transparent plastic caddy hangs on inside of closet door. Eight ample pockets for soap, brushes, wearing apparel, etc. Snap-open loops hold brooms and mops well off the floor. . .Closet dehumidifier is an electric device to be placed on the closet floor. It warms, drys and circulates the air, thereby ending mold and musty odors.

* * *

Home Gardener: *Downspout accessory is a 12-foot green plastic sleeve which attaches to the downspout and can be rolled up during dry weather. When it rains, the sleeve unrolls automatically and the water is carried away from the house and deposited where it is needed. The last four feet have perforations which produce a spraying action. . . Drinking fountain attaches to outside faucet and permits the attachment of a garden hose without disconnecting the fountain. It has a flexible drinking cup and mouth guard. Made of aluminum and plastic, it also has a rubber tube at the base to drain away excess water.*

* * *

Personal Business: Battery-operated eraser comes with seven tips for all types of erasing jobs. Useful for artists, draftsmen, typists, etc., oscillating action cleanly removes errors, even if made in ink. . .New zipper with interlocking plastic spirals rather than metal teeth. If it jams or snags, the spirals can be pulled apart with the fingers and then easily zipped up again. . .Electronic transformer for electric razors converts any European current to run American razors. It weighs only seven ounces and comes with a five-year guarantee.

* * *

The Home Workman: *Combination screen and storm door of aluminum has vinyl magnetic strips on frame and latch which close the door automatically, keeping out insects in summer and drafts in the winter. . . Aluminum ladder rolls up into a small package for carrying and storing, but locks into a rigid conventional straight ladder in 30 seconds. It is available in 12- and 16-foot lengths, but when rolled up it can be carried up a winding stairway or stored in the trunk of a car. . .Plastic pipe comes with a hubbed end so that separate coupling or adhesive are not needed. It is also available with double-hubbing and will not corrode.*

* * *

For Sportsmen: A seagoing version of snowshoes made of molded plastic with resilient plastic coating. Water shoes have buoyancy enough to support up to 350 pounds. . .Oxygen inhalant for yachtsmen and seasick guests has plastic tube and face mask. Unit contains seven gallons of pure oxygen under pressure, and is small enough to be used while walking around the boat.

* * *

Write to CHALLENGE *for additional information.* ■